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ABSTRACT

This report provides information necessary to familiarize the nonautomatic data processing user with the Design of Training Systems (DOTS) programs and to permit their initial application. It consists of a single volume containing a system overview and detailed information on the major subsystem; The DOTS data base, the Educational Technology Evaluation (ETE) model, the System Capabilities Resources and Requirements (SCRR) model, and the Training Process Flow (TPF) model. Each subsystem section contains a discussion of subsystem architecture, design assumptions, input requirements, and output parameters. Procedures are provided for pre-application system test and operational use. The DOTS data base section also includes a discussion of administrative procedures. (Author/EMH)

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TAEG REPORT
NO. 30

DESIGN OF TRAINING SYSTEMS USER'S MANUAL

DATA BASE, ETE, SCRR, AND TPF MODELS

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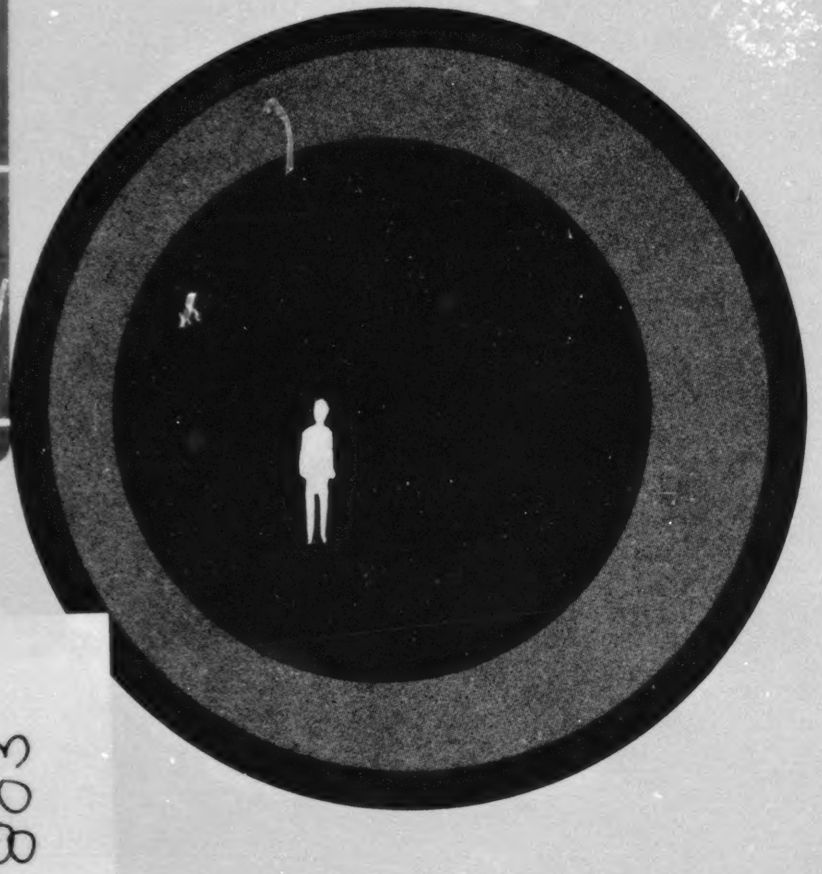

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TRAINING ANALYSIS AND EVALUATION GROUP
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Technical Report: TAEG REPORT NO. 30

DESIGN OF TRAINING SYSTEMS

USER'S MANUAL

ABSTRACT

This report provides information necessary to familiarize the non-ADP user with the Design of Training Systems (DOTS) programs and to permit their initial application. It consists of a single volume containing a system overview and detailed information on the major subsystems: the DOTS data base, the Educational Technology Evaluation (ETE) model, the System Capabilities Resources and Requirements (SCRR) model and the Training Process Flow (TPF) model.

Each subsystem section contains a discussion of subsystem architecture, design assumptions, input requirements and output parameters. Procedures are provided for pre-application system test and for operational use. The DOTS data base section also includes a discussion of administrative procedures.

The programs described in this manual were developed by IBM corporation for the Training Analysis and Evaluation Group, Orlando, Florida (Contract No. N61339-73-C-0097).

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TAEG Report No. 30

DESIGN OF TRAINING SYSTEMS
USER'S MANUAL
DATA BASE, ETE, SCRR, AND TPF MODELS

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by

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for the

Training Analysis and Evaluation Group

September 1975

U.S. DEPARTMENT OF HEALTH,
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SECTION I

INTRODUCTION

PURPOSE

The purpose of this User's Manual is to familiarize the non-ADP user of the Design of Training Systems (DOTS) programs with the operation of the three DOTS models and the DOTS data base. It is concerned with methods for using the DOTS programs without detailed treatment of the design rationale or specific programming techniques employed in developing the models and the data base. The design of the system components is covered in detail in Volumes I and II of TAEG Report 12-2, "Design of Training Systems Phase II Report." Detailed programming information is contained in TAEG Report No. 29, "The Design of Training Systems Program Maintenance Manual."

ORGANIZATION

This manual is organized in four major sections covering the DOTS data base, the Educational Technology Evaluation (ETE) model, the System Capabilities Requirements and Resources (SCRR) model and the Training Process Flow (TPF) model respectively. The sections dealing with the models are all organized similarly and include subsections on model architecture, operational procedures and operational test. The model architecture section describes the model for the user in terms of model functions, significant design assumptions, input data requirements and output data descriptions. Operational procedures are covered as they relate specifically to the individual models and contain the steps necessary to apply the models to appropriate problems. Operational tests are specified to the extent necessary to assess system functional integrity but do not cover tests to determine the validity of the system in specific applications.

The DOTS data base section covers the structure of the data base itself including the data hierarchy employed in its construction. Operational procedures are divided into three types: the procedures necessary to obtain the data required to keep the data base current, the procedures for entering these data into the data base, and the procedures for extracting data from the data base for reports or for use by the models.

SYSTEM OVERVIEW

The four major parts of the system are:

a) System Capabilities Requirements and Resources (SCRR) model. A linear programming model designed to determine the maximum student throughput for a training complex, based on an optimal mix of course convenings and available resources.

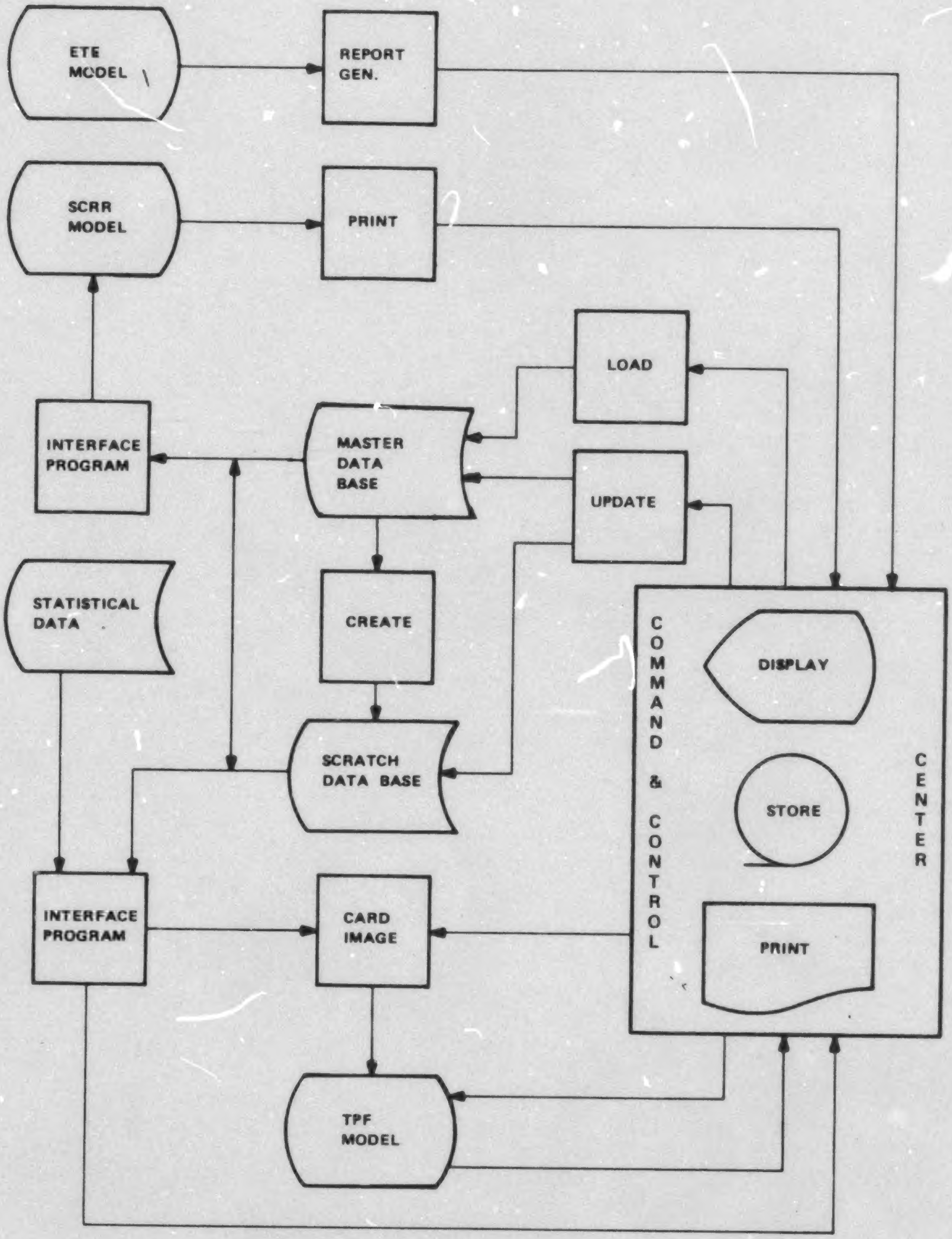

ETE MODEL
REPORT GEN.
SCRR MODEL
PRINT
LOAD
INTERFACE PROGRAM
MASTER DATA BASE
UPDATE
STATISTICAL DATA
CREATE
COMMAND & CONTROL CENTER
DISPLAY
SCRATCH DATA BASE
STORE
INTERFACE PROGRAM
CARD IMAGE
PRINT
TPF MODEL

FIGURE I-1 DOTS SYSTEM DIAGRAM

b) Training Process Flow (TPF) model. The TPF model is an aggregate flow model designed to project the effect, on training system output, of changes in demand, scheduling, course capacity, and utilization.

c) Educational Technology Evaluation (ETE) model. A generalized entity flow simulation designed to project average time to complete and resource utilization for Individualized Learning Systems.

d) The DOTS data base provides a common, direct access data source for both the SCRR and TPF models. The DOTS data base was constructed and is accessed via the RAMIS system, a data base language developed by Mathematica, Inc.

The total system consists of the three models, the data base and the time-sharing support system. The data base, in addition to providing reports for direct use, also provides input data files for the SCRR and TPF models. Figure I-1 is an overview of the DOTS programs and shows the flow of data between different parts of the system.

As Figure I-1 shows, DOTS is an interactive system designed to be operated via a terminal located, remote from the central computer, at the user's site. This type of operation requires extensive software support to control the central computer, the communication lines, etc.. All support software and computer services were supplied, on a lease basis, by National CSS, Inc., Norwalk, Connecticut

Although Figure I-1 shows display, printing and recording capability at the user site, in practice only a display or print capability is necessary to use the DOTS programs. The procedures outlined in this manual do not presume the existence of any particular hardware configuration at the user site.

GENERAL SYSTEM PROCEDURES

Detailed procedures for model and data base operations are contained in the appropriate sections within this report. General procedures are those which deal directly with the time-sharing system. Procedures such as login, typing conventions and system level error recovery are included in the category of general procedures. It is assumed that the user will familiarize himself with the basic procedures for using the time-sharing system prior to any attempt to use the DOTS system itself.

General system procedures are covered in the documentation provided as a part of the support supplied by National CSS. The user should be acquainted with the following National CSS documents:

A Guide to the National CSS Computer System for Application Product Users (NCSS Form 991) Sections 1 and 7 specifically.

VP/CSS Edit Command (NCSS Form 108)

Report Generation VP/CSS RAMIS
(NCSS Form 961)

Installer's Guide VP/CSS RAMIS
(NCSS Form 963)

Basic system operations such as login, Initial Program Load, system interrupts, etc. are covered in NCSS Form 991 (see above) sections 1 and 7. Consequently, they will not be reproduced in this User's Manual.

SECTION II

DOTS DATA BASE

DATA BASE ARCHITECTURE

The DOTS data base consists of three independent data bases:

- A Facilities data base (FACIL) which describes the physical facilities assigned to each course.
- A Course data base (COURSE) which describes attributes and instructor assignments for each course.
- An Instructor data base (INST) which contains personnel information and time utilization information for each instructor.

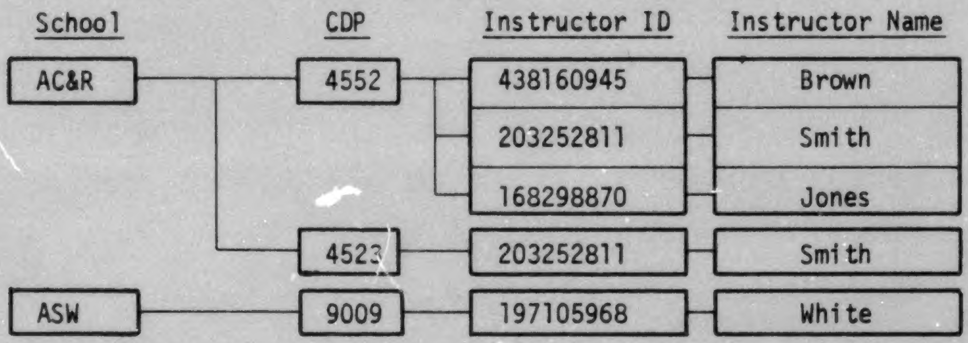
The three data bases support the DOTS TPF and SCRR models and provide data management/report generation capability to the User.

The data bases are implemented using RAMIS (Rapid Access Management Information System). RAMIS uses hierarchical (or "tree-structured") files. In addition to increasing storage and data maintenance efficiency, this structuring is conceptually most natural. Consider, for example, a very simple data base consisting of: (1) school code; (2) courses in each school (CDP numbers); and (3) instructors assigned to teach each course. A graphic comparison of tree-structured vs. unstructured design of this sample data base is shown below.

Unstructured (Sample Data Base)

School	CDP	Instructor ID	Instructor Name
AC&R	4552	438160945	Brown
AC&R	4552	203252811	Smith
AC&R	4552	168298870	Jones
AC&R	4523	203252811	Smith
ASW	9009	197105968	White

Tree-Structured (Sample Data Base)


School
CDP
Instructor ID
Instructor Name
AC&R
4552
438160945
Brown
203252811
Smith
168298870
Jones
4523
203252811
Smith
ASW
9009
197105968
White

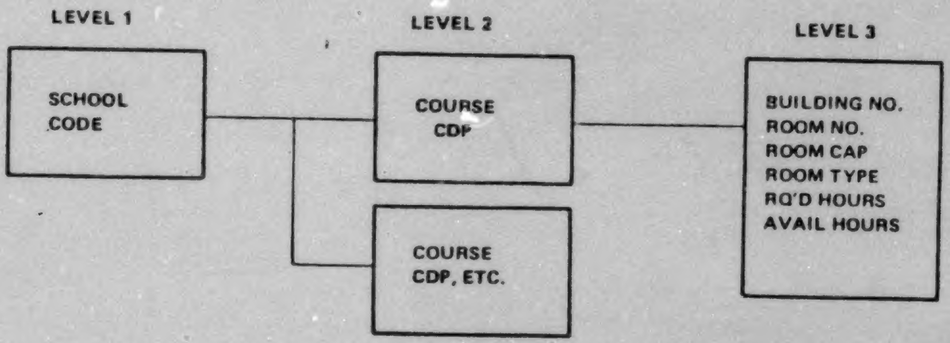
The tree-structuring:

- Requires less storage. Higher level information need be stored only once rather than multiple times.
- Increases data management efficiency, since processing of redundant data is minimized or eliminated.

A "field" in a tree-structured file is a unit of information in the data base. In the sample data base, there are four fields: (1) School; (2) CDP; (3) Instructor ID; and (4) Instructor Name.

A "level" consists of all the fields in a single branch of the structure. In the sample data base, there are three levels: (1) School; (2) CDP; and (3) Instructor ID and Instructor Name.

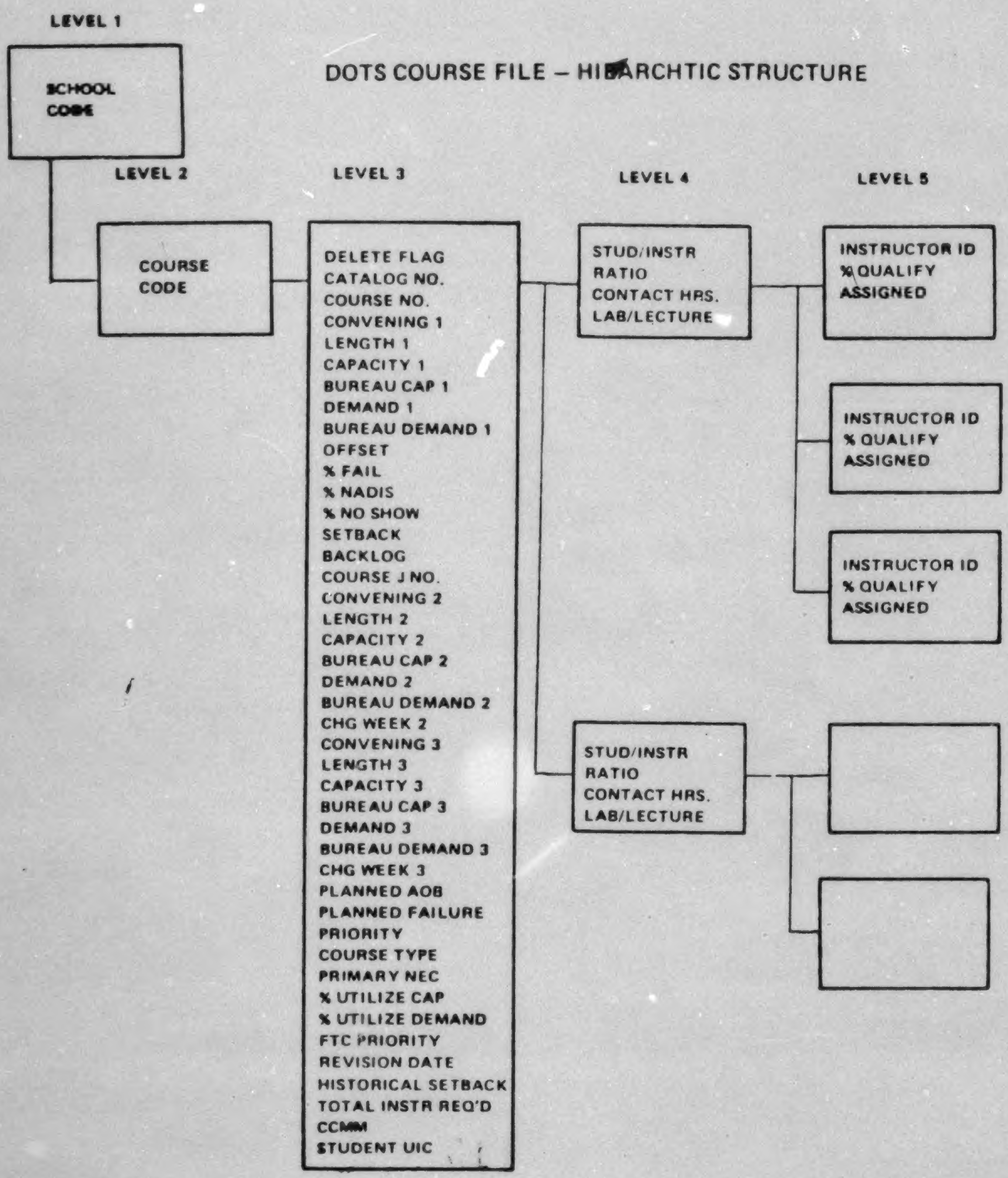
The DOTS Facilities Data Base (FACIL) structure is as follows:


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
COURSE CDP, ETC.
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE

Within the Facilities file structure, each school segment will control several course segments. Several Level 3 facilities segments can originate from each course segment.

The DOTS Course File (COURSE) structure is shown below:



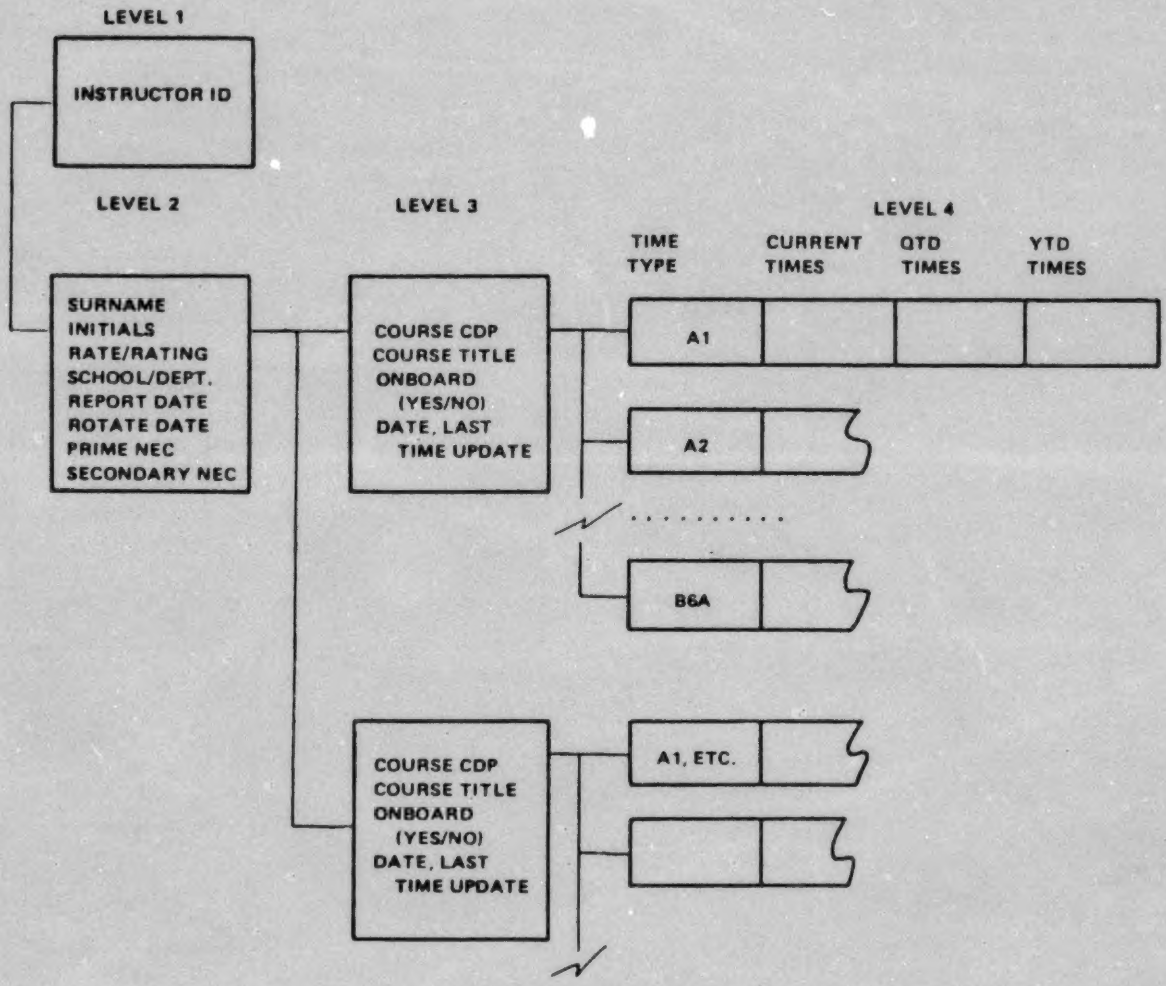
DOTS COURSE FILE – HIERARCHTIC STRUCTURE

LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
LEVEL 5
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED

The Course file exhibits no multiple branching between Levels 2 and 3; i.e., for each Level 2 segment, there is one, and only one, Level 3 segment.

Not shown on the Course file structure diagram is a Level 6 segment. This segment is called a "virtual segment" within the RAMIS system terminology. It consists of a software link to the DOTS Instructor file. The common link between these two files, at this level, is the Instructor ID field which exists in both files.

The DOTS Instructor file (INST) structure is:


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
....
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

The Instructor file will not require branching between Levels 1 and 2. For each Instructor ID, there is one, and only one, set of personnel information

Each Level 3 segment of the Instructor file controls exactly 14 unique Level 4 time segments.

A copy of each of the structural diagrams presented on the preceding pages will be included with the User documentation covering maintenance routines for the data base. These should be helpful in assisting the user to predict and plan the results of adding, modifying, or deleting data within each file.

DATA BASE MAINTENANCE ADMINISTRATIVE PROCEDURES

All data items in the DOTS data base which are subject to periodic maintenance, are listed in the following tables. Except for those items noted, all data base items are to be updated as changes occur. DOTS data base maintenance forms will be provided to those areas with maintenance responsibility. These forms will include specific instructions regarding the data to be recorded and the format in which they are to be recorded. The forms should be forwarded to the DOTS data base terminal operator for system update as changes occur.

COURSE FILE

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
School Code (SCH), A4	Quota Control	
Course CDP Number (CDP), A4	Quota Control	From NITRAS Form 17
Course Delete Flag (DEL), A1 1 = Course Active 0 = Course Deleted	Quota Control	Change to 0 when course is disestablished
Course Catalog Number (CTLG), A4	Quota Control	From NITRAS Form 17
Course Title (CRS), A16	Quota Control	From NITRAS Form 17
Convenings Number 1 (CONV1), I3	Quota Control	From NITRAS Form 17
Course Length #1 (LEN1), F4.1	Quota Control	From NITRAS Form 17
Capacity #1 (CAP1), I3	Quota Control	From NITRAS Form 17
BUPERS Capacity #1 (BCAP1), I3	Quota Control	From CNTECHTRA Annual Training Plan
Demand #1 (DMD1), I5	Quota Control	
BUPERS Demand #1 (BDMD1), I5	Quota Control	From CNTECHTRA Annual Training Plan

COURSE FILE (Continued)

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
Failure Rate (PFAIL), F5.3	Quota Control	From NITRAS Form 1204
NONAC Disenrollment (NADIS), F5.3	Quota Control	From NITRAS Form 1204
Percent Setbacks (SETB), F5.3	Quota Control	From NITRAS Form 1204
Number Backlogs (BKLG), I4	Quota Control	From internal records (monthly)
Demand #2 (DMD2), I5	Quota Control	From NITRAS Form 17
BUPERS Demand #2 (BDMD2), I5	Quota Control	From CNTECHTRA Annual Training Plan
Course Demand #3 (DMD3), I5	Quota Control	From NITRAS Form 17
BUPERS Demand #3 (BDMD3), I5	Quota Control	From CNTECHTRA Annual Training Plan
Planned AOB (PAOB), I4	Quota Control	From NITRAS MCRF (quarterly)
Academic Failures (AFAIL), F5.3	Quota Control	From NITRAS MCRF (quarterly)
Course Priority (PRTY), I2	Quota Control	From NITRAS MCRF (quarterly)
Course Type (CTYPE), A2	Quota Control	From NITRAS MCRF (quarterly)
Primary NEC (PNEC), A4	Quota Control	From NITRAS MCRF (quarterly)
% Capacity Utilized (UCAP), I3	Quota Control	Generated by TPF model
% Demand Utilized (UDEM), I3	Quota Control	Generated by TPF model
FTC Priority (FPRTY), I2	TPC	
Review Date (RDTE), I6	TPC	
Historical Setback (HSETB), F5.3	TPC	

COURSE FILE (Continued)

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
Total Instructors Required (TINSTR), F4.1	TPC	From CNTECHTRA Instructor Computation Form 5311-1
Course CCMM (CCMM), A10	TPC	
Student/Instructor Ratio (SIR), F4.1	School Director	From Course Master Schedule - CNTECHTRA Form 1540-1
Instr Contact Hours (CHRS), F5.1	School Director	From Course Master Schedule - CNTECHTRA Form 1540-1
Course Type (CTYP), A1	School Director	From Course Master Schedule - CNTECHTRA Form 1540-1
Instructor SSN (ID), A9	School Director	From internal records (list all qualified)
Instr % Qualified (QUAL), A3	School Director	From internal records
Instr Assign Flag (ASN), A1 1 = Assigned 0 = Not Assigned	School Director	From internal records

FACILITIES FILE

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
School Code (SCH), A4	School Director	From internal records
Course CDP Number (CDP), A4	School Director	From internal records
Building Number (BLDG), A5	School Director	From internal records
Room Number (RM), A3	School Director	From internal records
Room Capacity (RMCAP), I3	School Director	From internal records

FACILITIES FILE (Continued)

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
Room Type (RMTP), A1 1 = Lecture 2 = Lab 3 = Both	School Director	From internal records
Required Hours (REQHRS), F6.1	School Director	From internal records
Available Hours (AVHRS), I5	School Director	From internal records

INSTRUCTOR FILE

Field Name (Mnemonic), Data Type	Maintenance Responsibility	Notes
Instructor Social Security Number (ID), A9	Personnel Dept.	From BUPERS reports
Instructor Surname (NME), A16	Personnel Dept.	From BUPERS reports
Instructor Initials (IN), A2	Personnel Dept.	From BUPERS reports
Rate/Rating (RATE), A5	Personnel Dept.	From BUPERS reports
School (SCH), A4	TPC	
Reporting Date (REP), A4, YYMM	Personnel Dept.	From BUPERS reports
Rotation Date (ROT), A4, YYMM	Personnel Dept.	From BUPERS reports
Primary NEC (PNEC), A4	Personnel Dept.	From BUPERS reports
Secondary NEC (SNEC), A4	Personnel Dept.	From BUPERS reports
*Assigned Course CDP Number (CDP), A4	School Director	From internal records
Course Title (TTL), A16	School Director	From internal records
Instructor Onboard Flag (ONB), A1 1 = Yes 0 = No	Personnel Dept.	From BUPERS reports

*This should agree with the instructor utilization summary. An instructor is assigned to a course if he charges time to the course.

DATA BASE OPERATIONAL (EXECUTIVE) PROCEDURES

This section encompases separate documentation packages for each of the operational procedures (known as "Executives") supplied for creation and maintenance of the DOTS data base. Use of such Executives in the interactive on-line mode with the Hazeltine 2000 Display Terminal, presupposes a passing knowledge on the part of the User in the following aspects of the NCSS time-sharing system:

- o Sign on, sign off, program execution and kill, offline read, VP CSS modes, character and/or line deletion, prompting, and blip characters.
- o Basic EDIT mode functions and their use.
- o A general understanding of the RAMIS Data Management Base System, its features and general utility.
- o Interactive report generation using the basic TABLE function of the RAMIS system.
- o Data base browsing and changes/deletions via the SCAN function of the RAMIS system.

If the User intends either using or changing the data within the DOTS data base, it is logical to assume that his knowledge extends to the general contents of the data base (which fields are present).

Within the Executive documentation, certain conventions have been used which parallel those found in the general manuals of NCSS. In particular, the following conventions deserve mention:

- o Many Executive documentation packages contain a sample of a terminal run of that Executive. The character set of the terminal used to provide the runs for this documentation may be at variance with the character sets of the Hazeltine 2000 display or the associated Hazeltine printer.
- o Any printed example included as an illustration is produced entirely using upper-case letters.
- o When attempting to illustrate anticipated keyboard entry and display terminal responses, the following typing conventions are used:

```
e14  (CR)
NO ERROR PRESENT
```

- Lower-case letters and digits represent input to be provided by the User.
- (CR) implies a carriage-return by the User.
- Text indicated in upper-case letters represents output from the computer system to the display.

- Data fields to be entered via terminal keyboard are described as to format, using the following RAMIS system conventions:

Field Type = A	Alphanumeric field - can contain alphabetic, numeric, and/or special characters. Blank characters can also be included
= I	Integer (non-fractional) numeric field.
= F	Fixed Decimal numeric field - fractional, and/or integer (whole number) entries will suffice.

In addition to field type, each data field has a related size specification paralleling the following examples:

A14	This imples a character field of a total width of 14 positions; total size includes blanks, if any are present.
I7	Implies a number of maximum numeric value equal to seven (7) digits; e. g., 9,999,999 - Note that comma(s) may not be used in the terminal entry of 'I' specification fields.
F6.2	Represents a fractional numeric field of a total width of six positions, two of which are to be considered to the right of the decimal point. Since the point occupies one position, F6.2 format represents a value maximum of 999.99. When entering data in response to 'F'specification prompts, either fractional or whole numbers may be provided.

- In general, the Executive routines may be operationally divided into five distinct categories:

  Class A Prompting Executives - This type is used for data maintenance (entry, change, deletion). The Executive will prompt the User as to which fields to enter -- the field format will also be a portion of the prompting text. Some fields will be mandatory, some optional. In the case of the optional types, the User may elect to let the field value default rather than provide a specific entry from the terminal. An entry is provided to allow the User the option of aborting this type of Executive; such a request essentially cancels any further data maintenance operation that may have resulted.

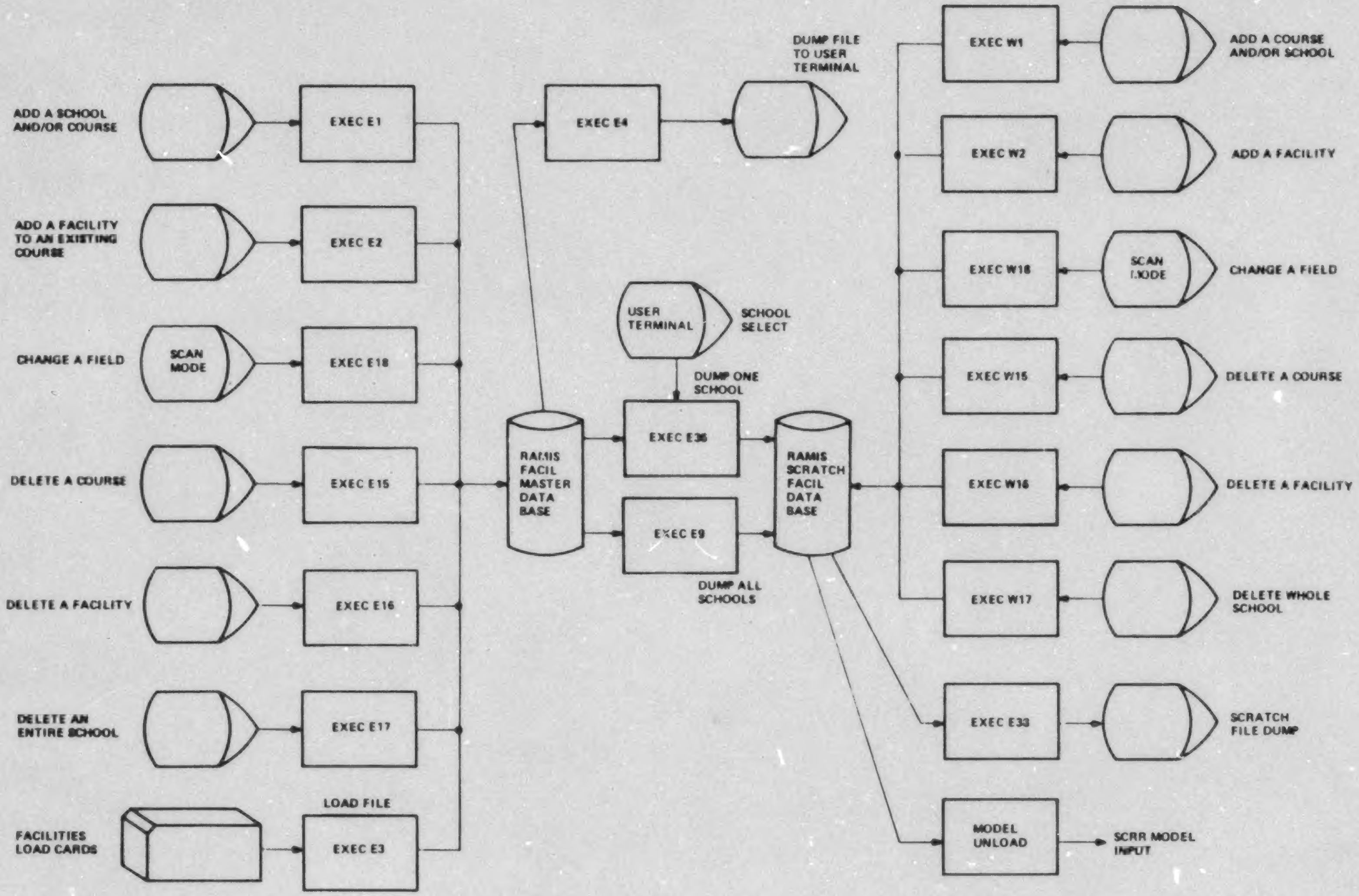
  Class B Prompting Executives - This type is used for data entry and deletion. All fields prompted must be entered. No fields are optional. This type may also be optionally aborted at any time, up to the provision of the last data field. Once the last field has been provided and data maintenance commenced, the Executive must be allowed to run to conclusion.

Non Prompting Executives - Used for miscellaneous data operations; no input is required or solicited from the User once the Executive commences operation. Once operation has commenced, the Executive must be allowed to run to conclusion.

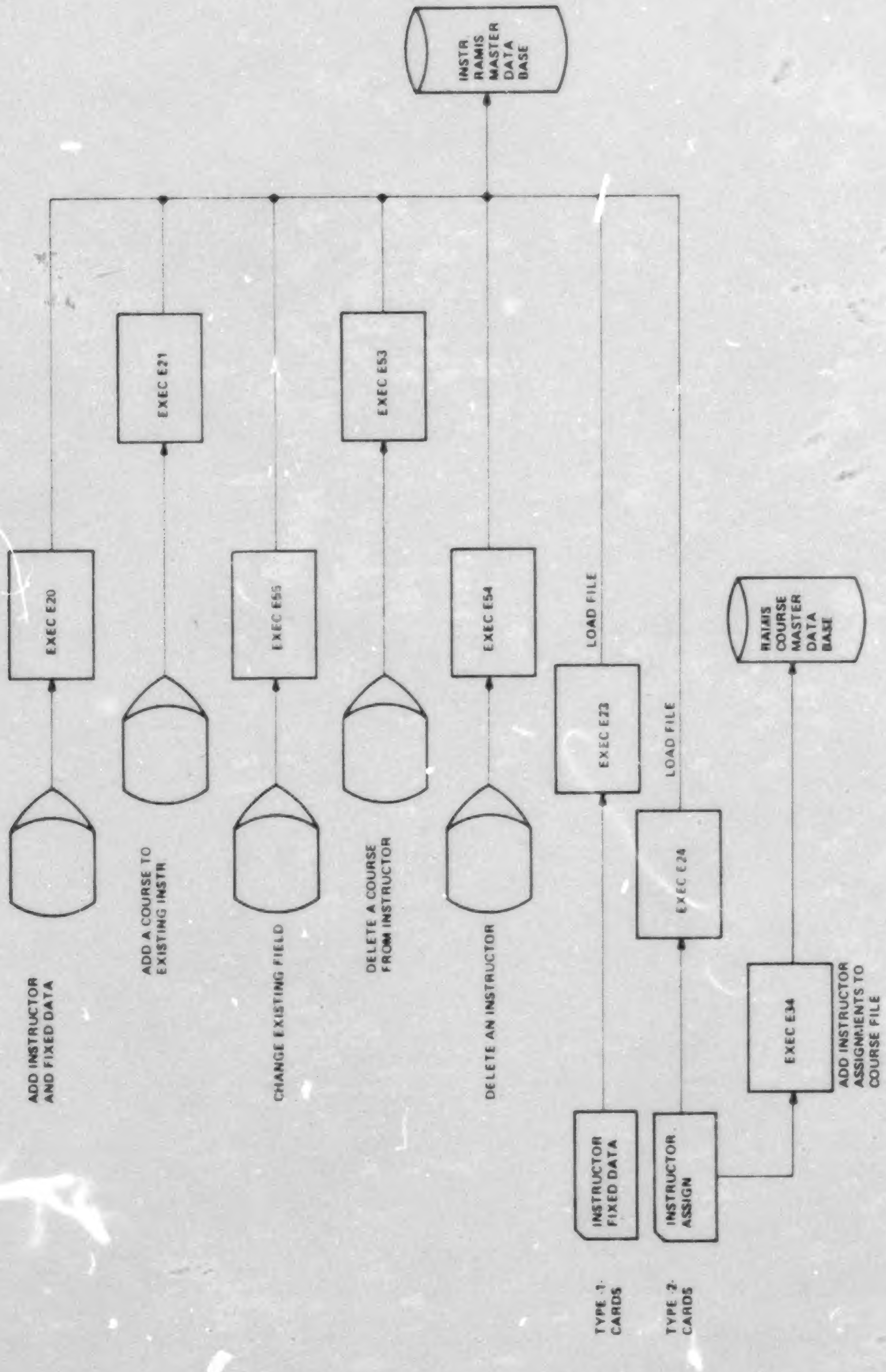
Display Dump Executives - Several Executives of this type have been provided for use in original and bulk loading of the various DOTS data bases. It is assumed that this class of Executive will receive little use once the original data bases have been loaded, and the DOTS system passes into the operational category.

For each of the three data bases (Facilities, Instructor, and Course) of the DOTS system, diagrams follow which pictorially depict the action and utility of the Executives to be provided for data maintenance. Each of the three files of the DOTS data base exists in two distinct versions -- scratch and master. The scratch version is created from the contents of the master. The data within the scratch may be modified or expanded at the User's discretion. Any alteration of the data contents of the master version may be considered a permanent change to the given data base. Such changes must be undertaken carefully and with prior planning, if the integrity of the data base is to be maintained. Any "what if" operations to be performed in conjunction with DOTS model execution should be directed to the scratch versions of the data base.

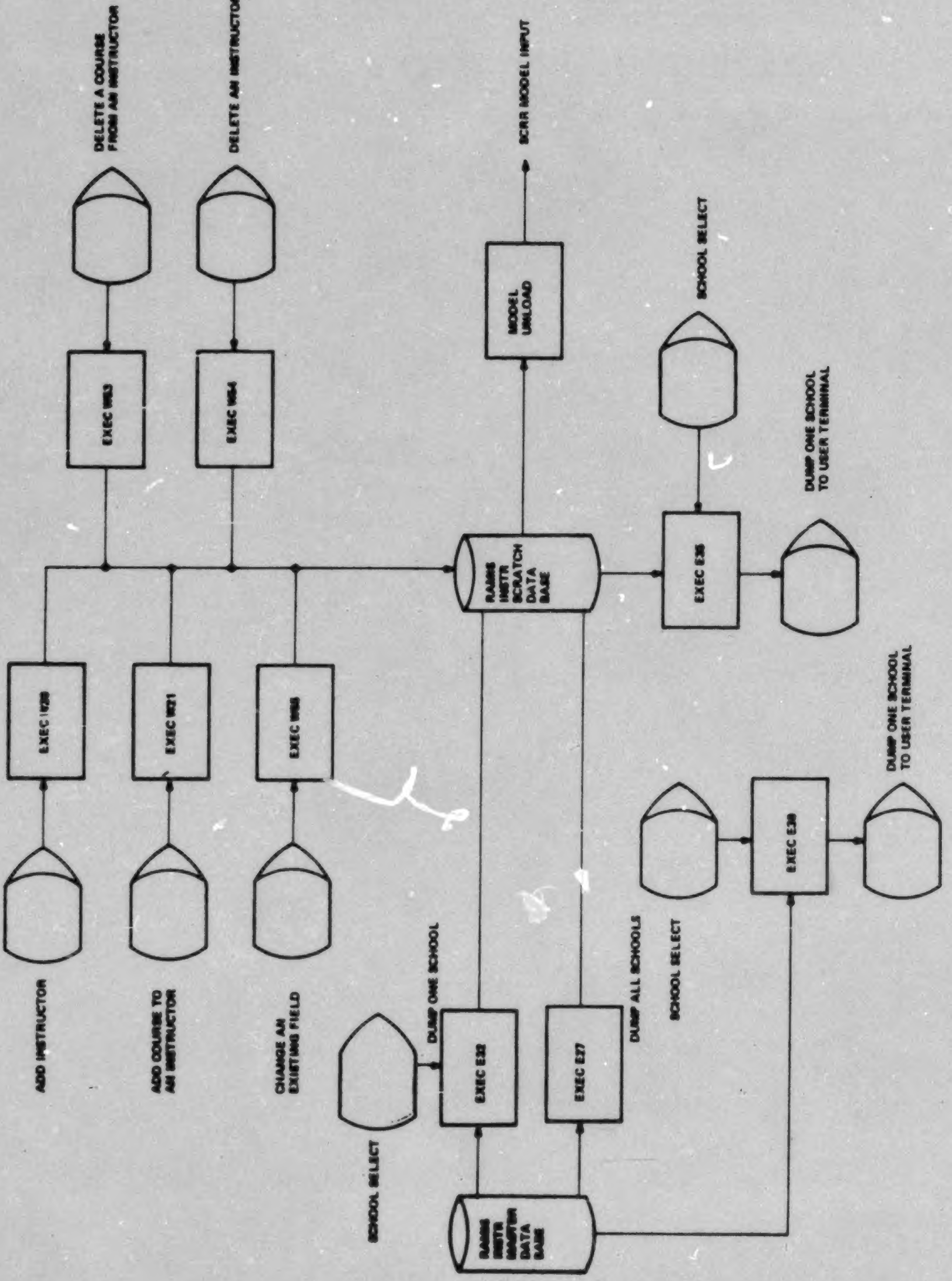
A distinct set of data maintenance Executives is provided for each master and each scratch version of the three files. Each of the three files has an Executive provided to allow dump of the scratch or the master data base contents to the display terminal and printer. Executives are also provided to create a new copy of the scratch version from the records within the master of each of the three files.


ADD A SCHOOL AND/OR COURSE
EXEC E1
ADD A FACILITY TO AN EXISTING COURSE
EXEC E2
CHANGE A FIELD
SCAN MODE
EXEC E18
DELETE A COURSE
EXEC E15
DELETE A FACILITY
EXEC E16
DELETE AN ENTIRE SCHOOL
EXEC E17
FACILITIES LOAD CARDS
LOAD FILE
EXEC E3
RAMIS FACIL MASTER DATA BASE
EXEC E4
DUMP FILE TO USER TERMINAL
USER TERMINAL
SCHOOL SELECT
DUMP ONE SCHOOL
EXEC E36
EXEC E9
DUMP ALL SCHOOLS
RAMIS SCRATCH FACIL DATA BASE
EXEC W1
ADD A COURSE AND/OR SCHOOL
EXEC W2
ADD A FACILITY
EXEC W18
SCAN MODE
CHANGE A FIELD
EXEC W15
DELETE A COURSE
EXEC W16
DELETE A FACILITY
EXEC W17
DELETE WHOLE SCHOOL
EXEC E33
SCRATCH FILE DUMP
MODEL UNLOAD
SCRR MODEL INPUT

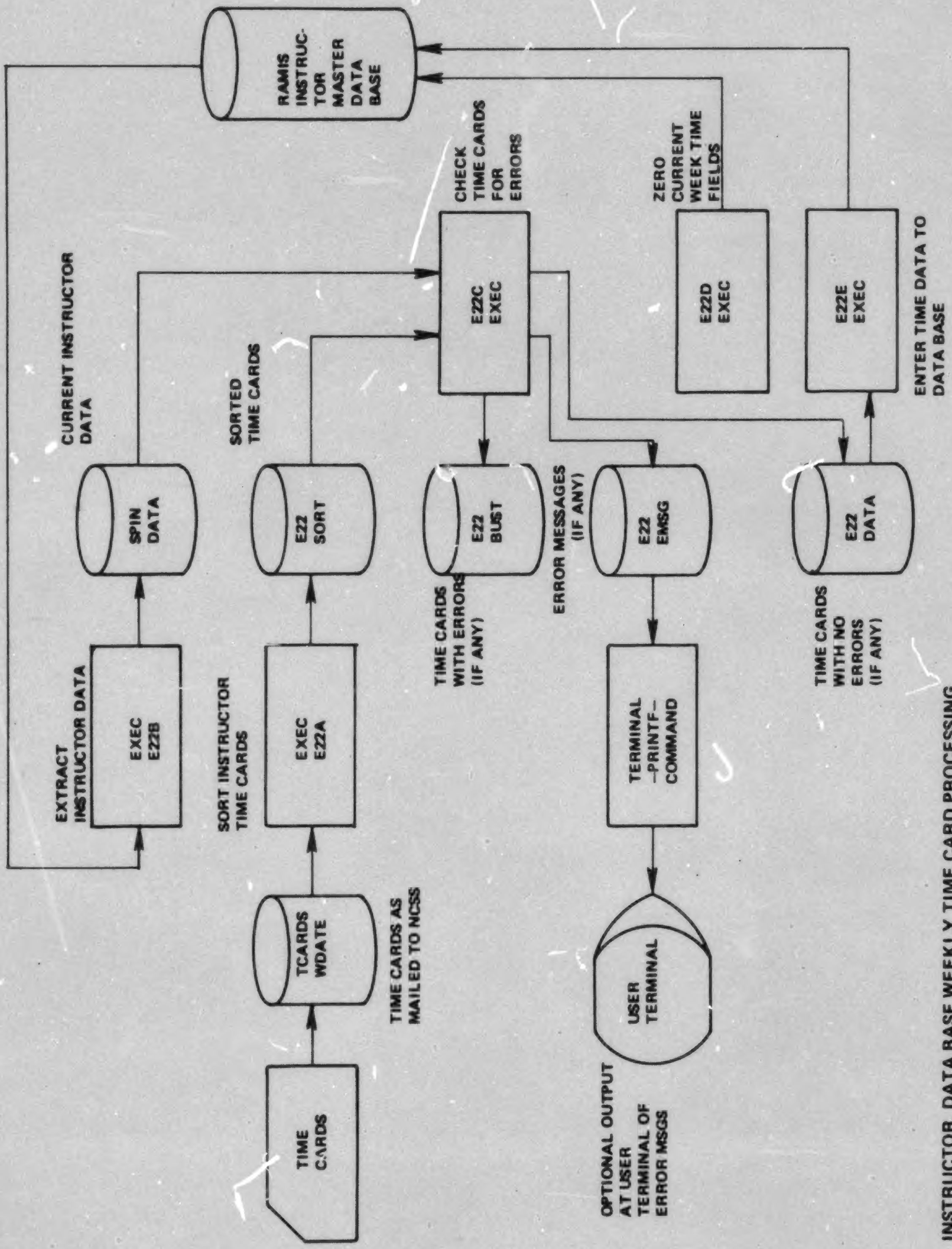
FACILITIES DATA BASE MAINTENANCE


INSTR. RAMIS MASTER DATA BASE
ADD INSTRUCTOR AND FIXED DATA
EXEC E20
ADD A COURSE TO EXISTING INSTR
EXEC E21
CHANGE EXISTING FIELD
EXEC E55
DELETE A COURSE FROM INSTRUCTOR
EXEC E53
DELETE AN INSTRUCTOR
EXEC E54
TYPE 1 CARDS
INSTRUCTOR FIXED DATA
EXEC E23
LOAD FILE
TYPE 2 CARDS
INSTRUCTOR ASSIGN
EXEC E24
LOAD FILE
EXEC E34
ADD INSTRUCTOR ASSIGNMENTS TO COURSE FILE
RAMIS COURSE MASTER DATA BASE

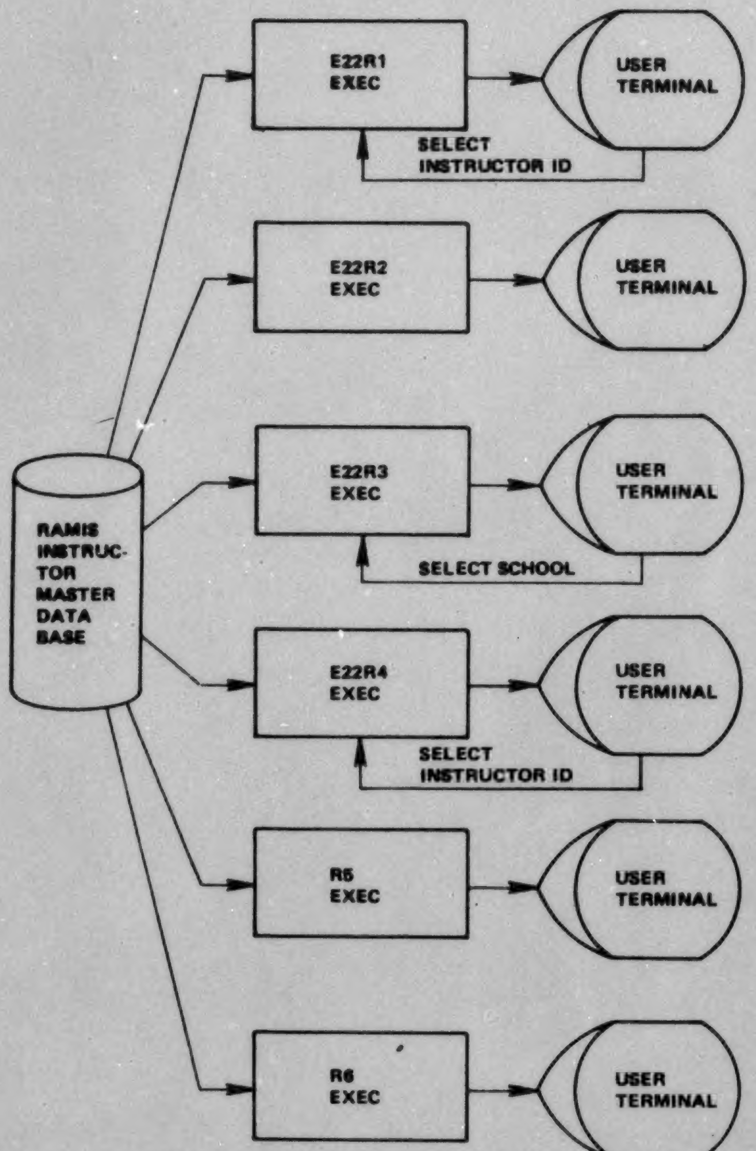
INSTRUCTOR DATA BASE MAINTENANCE


ADD INSTRUCTOR
ADD COURSE TO AN INSTRUCTOR
CHANGE AN EXISTING FIELD
EXEC IM20
EXEC IM21
EXEC IM50
EXEC IM53
EXEC IM54
DELETE A COURSE FROM AN INSTRUCTOR
DELETE AN INSTRUCTOR
RAMIS INSTR SCRATCH DATA BASE
MODEL UNLOAD
SCRR MODEL INPUT
SCHOOL SELECT
EXEC E26
DUMP ONE SCHOOL TO USER TERMINAL
SCHOOL SELECT
EXEC E32
DUMP ONE SCHOOL
EXEC E27
DUMP ALL SCHOOLS
SCHOOL SELECT
EXEC E30
DUMP ONE SCHOOL TO USER TERMINAL
RAMIS INSTR MASTER DATA BASE

INSTRUCTOR DATA BASE MAINTENANCE


RAMIS INSTRUCTOR MASTER DATA BASE
EXTRACT INSTRUCTOR DATA
EXEC E22B
SPIN DATA
CURRENT INSTRUCTOR DATA
SORT INSTRUCTOR TIME CARDS
EXEC E22A
E22 SORT
SORTED TIME CARDS
TIME CARDS
TCARDS WDATE
TIME CARDS AS MAILED TO NCSS
CHECK TIME CARDS FOR ERRORS
E22C EXEC
E22 BUST
TIME CARDS WITH ERRORS (IF ANY)
E22 EMSG
ERROR MESSAGES (IF ANY)
TERMINAL –PRINTF– COMMAND
USER TERMINAL
OPTIONAL OUTPUT AT USER TERMINAL OF ERROR MSGS
ZERO CURRENT WEEK TIME FIELDS
E22D EXEC
E22E EXEC
ENTER TIME DATA TO DATA BASE
E22 DATA
TIME CARDS WITH NO ERRORS (IF ANY)

INSTRUCTOR DATA BASE WEEKLY TIME CARD PROCESSING


RAMIS INSTRUCTOR MASTER DATA BASE
E22R1 EXEC
USER TERMINAL
SELECT INSTRUCTOR ID
E22R2 EXEC
USER TERMINAL
E22R3 EXEC
USER TERMINAL
SELECT SCHOOL
E22R4 EXEC
USER TERMINAL
SELECT INSTRUCTOR ID
R5 EXEC
USER TERMINAL
R6 EXEC
USER TERMINAL

FOR EACH INSTRUCTOR SELECTED, LIST ID, NAME, AND CDP NUMBERS OF EACH COURSE ASSIGNED.

OUTPUTS WHOLE INSTRUCTOR FILE LISTING BY SCHOOL: INSTRUCTOR ID, NAME, ASSIGNED COURSE CDP NUMBERS.

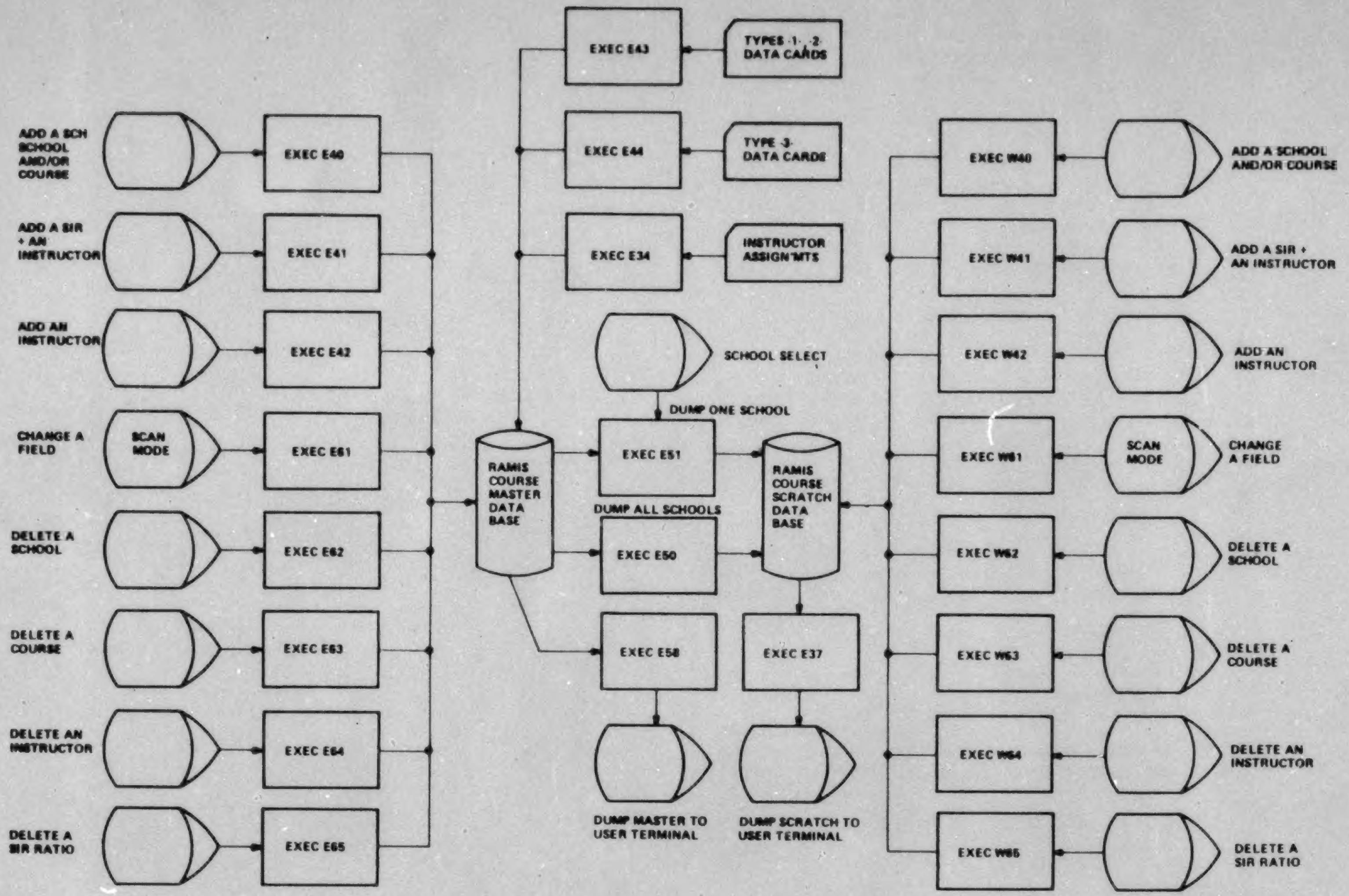
OUTPUTS, FOR THE SCHOOL SELECTED: INSTRUCTOR ID, NAME, AND SUM OF EACH INSTRUCTOR'S TIME EXPENDED DURING THE CURRENT WEEK.

FOR THE INSTRUCTOR SELECTED, LISTED ARE NAMES, ID, AND EACH OF THE COURSES' TIME TYPE, AND TIMES THAT HE HAS CHARGED DURING THE CURRENT WEEK.

FOR ALL SCHOOLS OF FTC, THE ROTATION DATES (MONTH/YEAR) AND THE NUMBERS OF INSTRUCTORS SCHEDULED TO ROTATE ON THOSE DATES ARE LISTED. ONLY THOSE ROTATIONS THAT WILL OCCUR IN THE NEXT 6 MONTHS ARE CONSIDERED.

ESSENTIALLY THE SAME USE AS REPORT R5, ABOVE, EXCEPT THAT THE NAME AND ID OF EACH INSTRUCTOR INVOLVED ARE INCLUDED.

INSTRUCTOR DATA BASE REPORTS


ADD A SCH SCHOOL AND/OR COURSE
EXEC E40
ADD A SIR + AN INSTRUCTOR
EXEC E41
ADD AN INSTRUCTOR
EXEC E42
CHANGE A FIELD
SCAN MODE
EXEC E61
DELETE A SCHOOL
EXEC E62
DELETE A COURSE
EXEC E63
DELETE AN INSTRUCTOR
EXEC E64
DELETE A SIR RATIO
EXEC E65
RAMIS COURSE MASTER DATA BASE
EXEC E43
TYPES ·1· ·2· DATA CARDS
EXEC E44
TYPE ·3· DATA CARDS
EXEC E34
INSTRUCTOR ASSIGN'MTS
SCHOOL SELECT
DUMP ONE SCHOOL
EXEC E51
DUMP ALL SCHOOLS
EXEC E50
EXEC E58
DUMP MASTER TO USER TERMINAL
RAMIS COURSE SCRATCH DATA BASE
EXEC E37
DUMP SCRATCH TO USER TERMINAL
EXEC W40
ADD A SCHOOL AND/OR COURSE
EXEC W41
ADD A SIR + AN INSTRUCTOR
EXEC W42
ADD AN INSTRUCTOR
EXEC W61
SCAN MODE
CHANGE A FIELD
EXEC W62
DELETE A SCHOOL
EXEC W63
DELETE A COURSE
EXEC W64
DELETE AN INSTRUCTOR
EXEC W65
DELETE A SIR RATIO

COURSE DATA BASE MAINTENANCE

DATA BASE EXECUTIVE INDEX

EXECUTIVE SEQUENCE	PAGE NO.	EXECUTIVE SEQUENCE	PAGE NO.	EXECUTIVE SEQUENCE	PAGE NO.
E1	II-20	E24	II-80	E64	II-145
E2	II-23	E27	II-103	E65	II-149
E3	II-35	E30	II-104	R5	II-120
E4	II-37	E32	II-101	R6	II-121
E9	II-39	E34	II-157	W1	II-40
E15	II-29	E35	II-105	W2	II-44
E16	II-31	E36	II-38	W15	II-50
E17	II-33	E37	II-163	W16	II-52
E18	II-27	E38	II-57	W17	II-55
E20	II-58	E40	II-122	W18	II-48
E21	II-63	E41	II-128	W20	II-82
E22A . . .	II-106	E42	II-132	W21	II-91
E22B . . .	II-109	E43	II-152	W40	II-164
E22C . . .	II-110	E44	II-155	W41	II-171
E22D . . .	II-112	E50	II-161	W42	II-175
E22E . . .	II-113	E51	II-160	W53	II-87
E22F . . .	II-114	E53	II-70	W54	II-95
E22G . . .	II-115	E54	II-74	W55	II-99
E22R1 . . .	II-116	E55	II-67	W61	II-180
E22R2 . . .	II-117	E58	II-162	W62	II-183
E22R3 . . .	II-118	E61	II-136	W63	II-185
E22R4 . . .	II-119	E62	II-140	W64	II-188
E23	II-78	E63	II-142	W65	II-193

EXECUTIVE: E1

FILE: Facilities

FUNCTION: Add a New Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E1 is invoked by the following CSS Mode entry:

```
el      (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                          CSS Mode Time Prompt
14.55.01    el    (CR)
*
* FUNCTION - ADD A NEW COURSE...
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive E1 Has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E1 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E1

FILE: Facilities

FUNCTION: Add a New Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Facilities File is depicted in the diagram below. Upon entry to the NEW mode, Executive E1 will issue terminal prompt messages for the Facilities File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

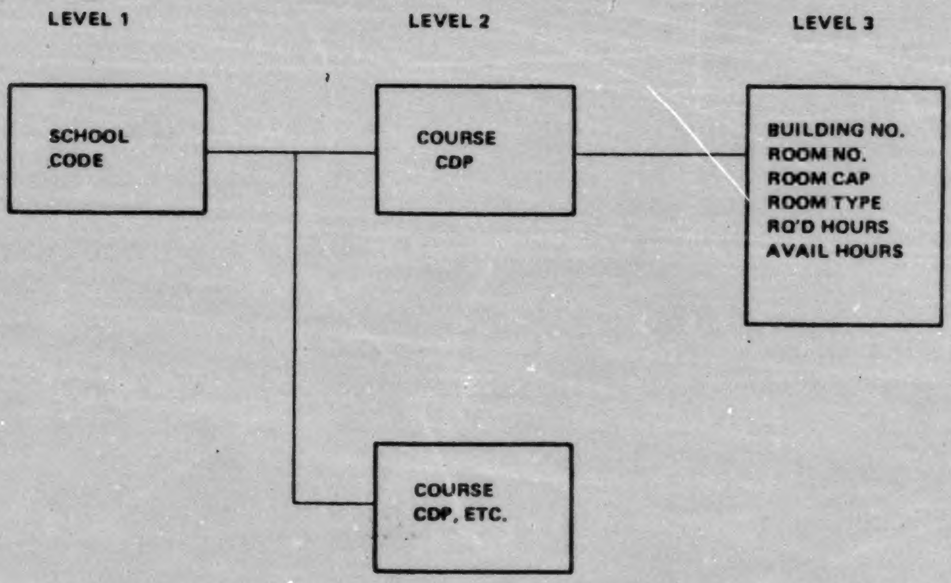
none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E1
FILE: Facilities
FUNCTION: Add a New Course

Data Fields Prompted by Executive E1

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			

SAMPLE TERMINAL RUN OF EXECUTIVE E1

```
12.59.53 E1
* FUNCTION - ADD A NEW COURSE...
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_SCH1
*
* ENTER COURSE CDP (CDP), A4
_CDP1
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
        NUMBER OF RECORDS UPDATED=        0  INCLUDED=          1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E1 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E2

FILE: Facilities

FUNCTION: Add a New Facility to
an Existing Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E2 is invoked by the following CCS Mode entry:

```
e2  CR
```

Upon invocation, the Executive will produce the following entry text:

```
__________________________CSS Mode Time Prompt
14.55.01  e2   CR
*
* FUNCTION - ADD NEW FACILITY TO AN EXISTING COURSE...
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  CR
```

Use of this entry implies that Executive E2 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E2 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E2

FILE: Facilities

FUNCTION: Add a New Facility to
an Existing Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Facilities File is depicted in the diagram below. Upon entry to the NEW mode, Executive E2 will issue terminal prompt messages for the Facilities File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

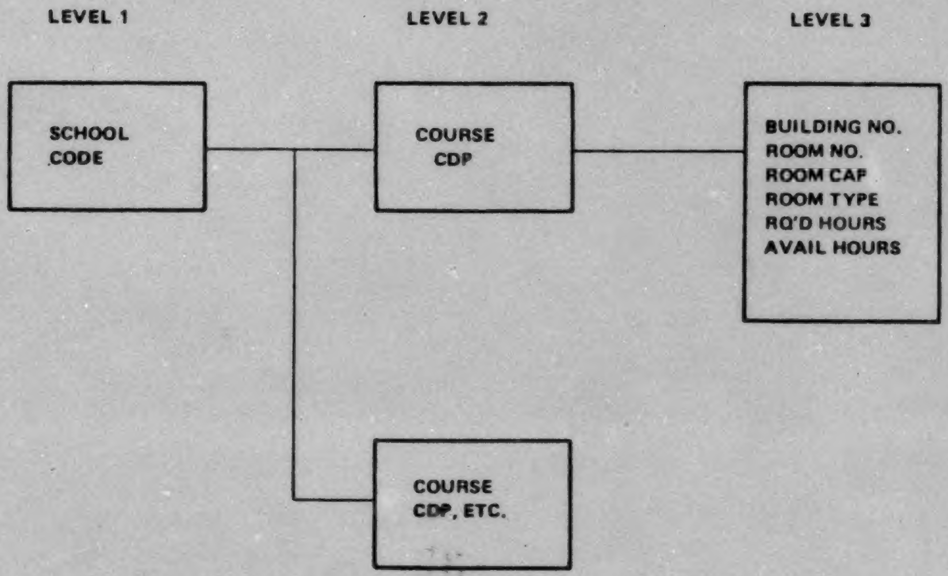
none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E2

FILE: Facilities

FUNCTION: Add a New Facility to an
Existing Course

Data Fields Prompted by Executive E2

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Building Number (BLDG), A5			
*	Room Number (RM), A3			
	Room Capacity (RMCAP), I3	0	0	200
	Room Type (RMTP), A1 1 = Lecture 2 = Lab 3 = Both	1		
	Required Hours (REQHRS), F6.1	0	0	3000
	Available Hours (AVHRS), I5	0	0	3000

EXECUTIVE: E2
FILE: Facilities
FUNCTION: Add a New Facility to an Existing Course

EXECUTIVE E2 SAMPLE RUN

```
11.01.27 E2
∷ FUNCTION - ADD NEW FACILITY TO AN
∷              EXISTING COURSE...
∷ SPECIFY EITHER NEW OR CHANGE ∷
_NEW
∷
∷ ENTER SCHOOL CODE (SCH), A4
_SCH1
∷
∷ ENTER COURSE CDP (CDP), A4
_CRS1
∷
∷ ENTER BUILDING NUMBER (BLDG), A5
_HGR1
∷
∷ ENTER ROOM NUMBER (RM), A3
_6
∷
∷ ENTER ROOM CAPACITY (RMCAP), I3
_DONE
∷
∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
         NUMBER OF RECORDS UPDATED=        0   INCLUDED=        1
```

The RAMIS maintenance messages above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E2 run. If the messages had indicated that zero (0) records had been included, the transaction was rejected by the RAMIS system as containing errors. In the instance of error, other RAMIS message(s) will be provided to assist the user in error correction.

For an example of an actual terminal run that produced an error, see the User Guide documentation for Executive W2. Executive W2 performs that same data maintenance activities as Executive E2 - W2 addresses the Facilities Scratch Data Base.

EXECUTIVE: E18

FILE: Facilities

FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive E18 is invoked via the following technique:

```
e18   (CR)
```

Executive response to invocation will assume the following pattern:

```
                                       CSS Mode Time Prompt
10.55.07  e18  (CR)  <---------------  User Invocation
             FILE                 FACIL
SCAN:
 |
 |  <--------------------------------  Standard SCAN Mode Functions may
 |                                     be executed at user's option...
 |
end  <-------------------------------  User entry required to cause exit
                                            from SCAN mode

fin  <-------------------------------  User entry required to return
                                            control from RAMIS to the CSS
                                            Mode of operation
```

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

For the Facilities data base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	SCH	1	A	4
2	CDP	2	A	4
3	BLDG	3	A	5
	RM	4	A	3
	RMCAP	5	I	3
	RMTP	6	A	1
	REQHRS	7	F	6.1
	AVHRS	8	I	5

EXECUTIVE: E18

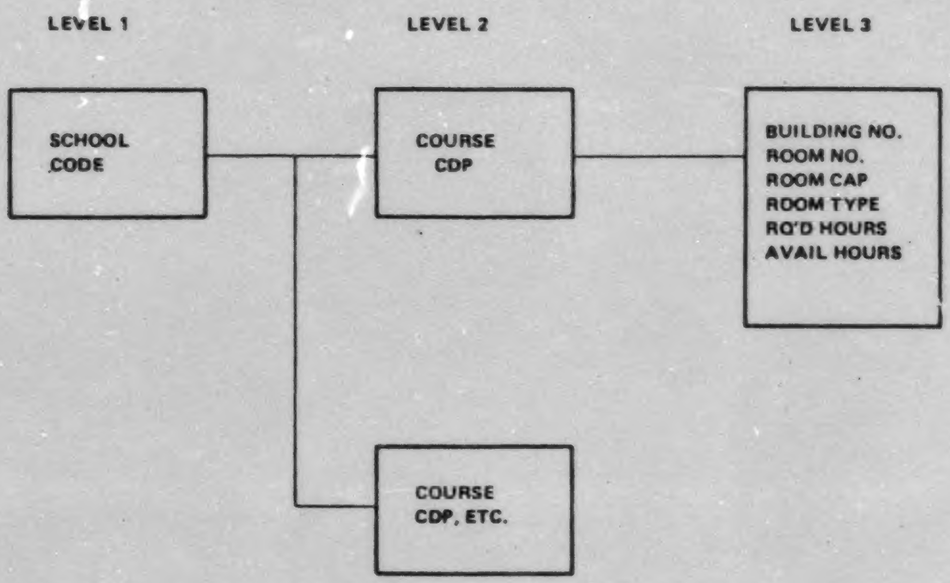
FILE: Facilaities

FUNCTION: Change an Existing Field

SAMPLE TERMINAL RUN OF EXECUTIVE E18

```
11.04.24 E18
!±          FILE    FACIL
SCAN:
SHOW ::
  01 SCH   02 CDP   03 BLDG 04 RM    05 RMCAP     06 RMTP 07 REQHRS    08 AVHRS
L 1=SCH1,2=CRS1
 01=SCH1 02=CRS1 03=         04=      05=  0 06=  07=     .0 08=     0
N
 01=SCH1 02=CRS1 03=HGR1  04=6    05=  0 06=  07=     .0 08=     0
C 4=±7
 01=SCH1 02=CRS1 03=HGR1  04=7    05=  0 06=  07=     .0 08=     0
END
±FIN
```

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E15
FILE: Facilities
FUNCTION: Delete a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E15 is invoked by the following CSS-Mode entry:

```
e15     CR
```

Upon invocation, the Executive will produce entry text identifying the Executive number (E15), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

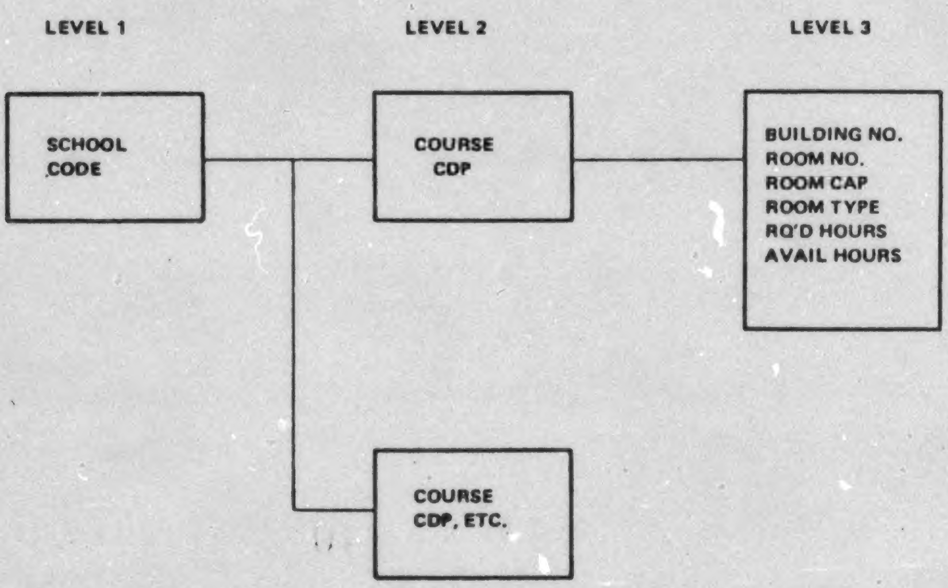
All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out     CR
```

will cause premature exit from the Executive without further data maintenance operations.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E15

FILE: Facilities

FUNCTION: Delete a Course

Data Fields Prompted by Executive E15

Field Name (Mnemonic), Data Type

School Code (SCH), A4

Course CDP Number (CDP), A4

SAMPLE TERMINAL RUN OF EXECUTIVE E15

```
11.08.31 E15
* FUNCTION - DELETE A COURSE
*
ENTER SCHOOL CODE (SCH), A4
SCH1
*
* ENTER COURSE CDP (CDP), A4
CRS1
          RECORDS DELETED=      1SEGMENTS DELETED=       2
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E15 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

For an example of a terminal run of Executive E15 that resulted in RAMIS rejection of the data maintenance transaction, see the documentation for Executive W15. Executive W15 performs the same data maintenance activities as Executive E15 - W15 addresses the Facilities Scratch Data Base.

EXECUTIVE: E16

FILE: Facilities

FUNCTION: Delete a Facility
From a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E16 is invoked by the following CSS-Mode entry:

e16 (CR)

Upon invocation, the Executive will produce entry text identifying the Executive number (E16), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

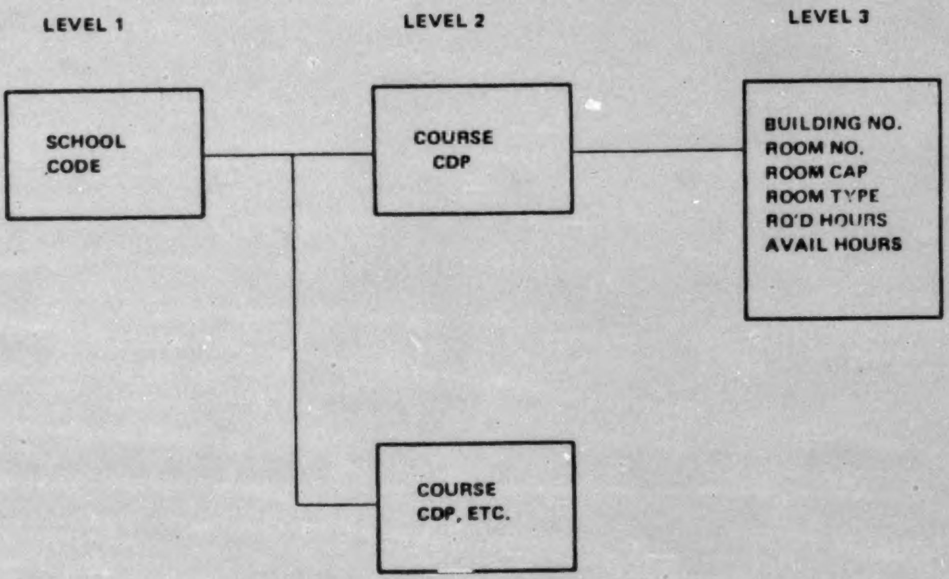
All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

out (CR)

will cause premature exit from the Executive without further data maintenance operations.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E16

FILE: Facilities

FUNCTION: Delete a Facility
From a Course

Data Fields Prompted by Executive E16

Field Name (Mnemonic), Data Type

School Code (SCH), A4

Course CDP Number (CDP), A4

Building Number (BLDG), A5

Room Number (RM), A3

SAMPLE TERMINAL RUN OF EXECUTIVE E16

```
11.06.27 E16
: FUNCTION - DELETE A FACILITY FROM A COURSE
:
: ENTER SCHOOL CODE (SCH), A4
SCH1
:
: ENTER COURSE CDP (CDP), A4
CRS1
:
: ENTER BUILDING NO (BLDG), A5
HGR1
:
: ENTER ROOM NO (RM),A3
7
         RECORDS DELETED=       1SEGMENTS DELETED=       1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E16 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E17
FILE: Facilities
FUNCTION: Delete a School

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E17 is invoked by the following CSS-Mode entry:

e17 (CR)

Upon invocation, the Executive will produce entry text identifying the Executive number (E17), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

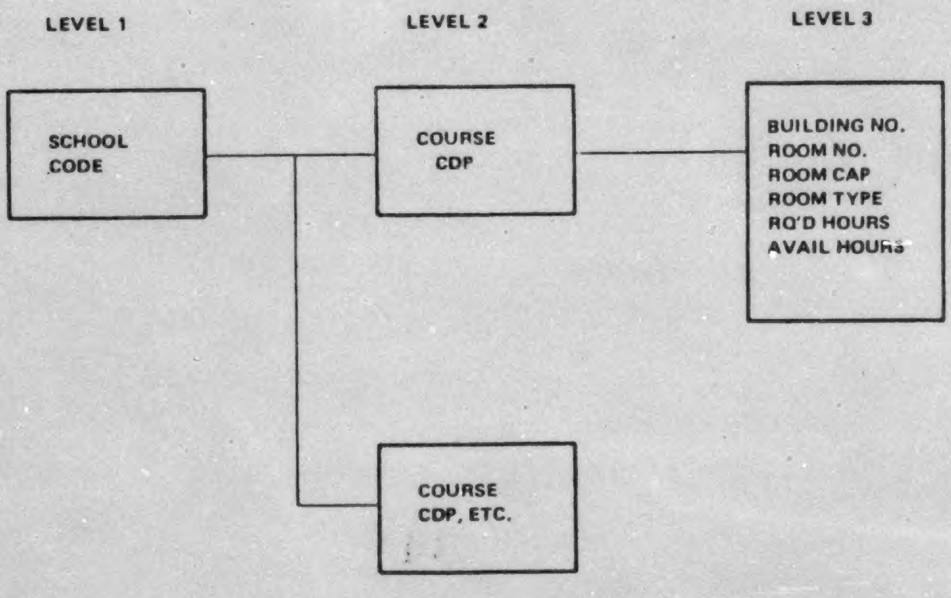
All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry

out (CR)

will cause premature exit from the Executive without further data maintenance operations.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: E17

FILE: Facilities

FUNCTION: Delete a School

Data Fields Prompted by Executive E17

Field Name (Mnemonic), Data Type

School Code (SCH), A4

SAMPLE TERMINAL RUN OF EXECUTIVE E17

```
11.09.33 E17
* FUNCTION - DELETE A SCHOOL
*
* ENTER SCHOOL CODE (SCH), A4
SCH1
          RECORDS DELETED=     0SEGMENTS DELETED=      1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E17 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E3

FILE: Facilities

FUNCTION: Load the Facilities
Master Data Base From
Card Input

EXECUTIVE TYPE

Executive E3 is used to load in its entirety the Facilities master data base. Input for this data base load is in the form of card image.

The format of the card input data set is illustrated in the diagram below entitled "Facilities Data Base Load Card Format." The actual punched cards that make up this input data set must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read into the NCSS computer system via a remote card reader.

Input to Executive E3 is named:

Filename = E3

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation, Executive E3 will indicate via an error message if the input E3 DATA is not present.

Executive E3 is invoked by the following terminal entry:

```
e3  (CR)
```

Once Executive E3 has successfully located its input data set and commenced load operations, no further action on the part of the user is required or requested.

Executive E3 begins the load of the Facilities master data base by erasing any prior copy of the same data set.

SAMPLE TERMINAL RUN OF EXECUTIVE E3

```
17.31.00 E3
        NUMBER OF RECORDS ENTERED=      194
```

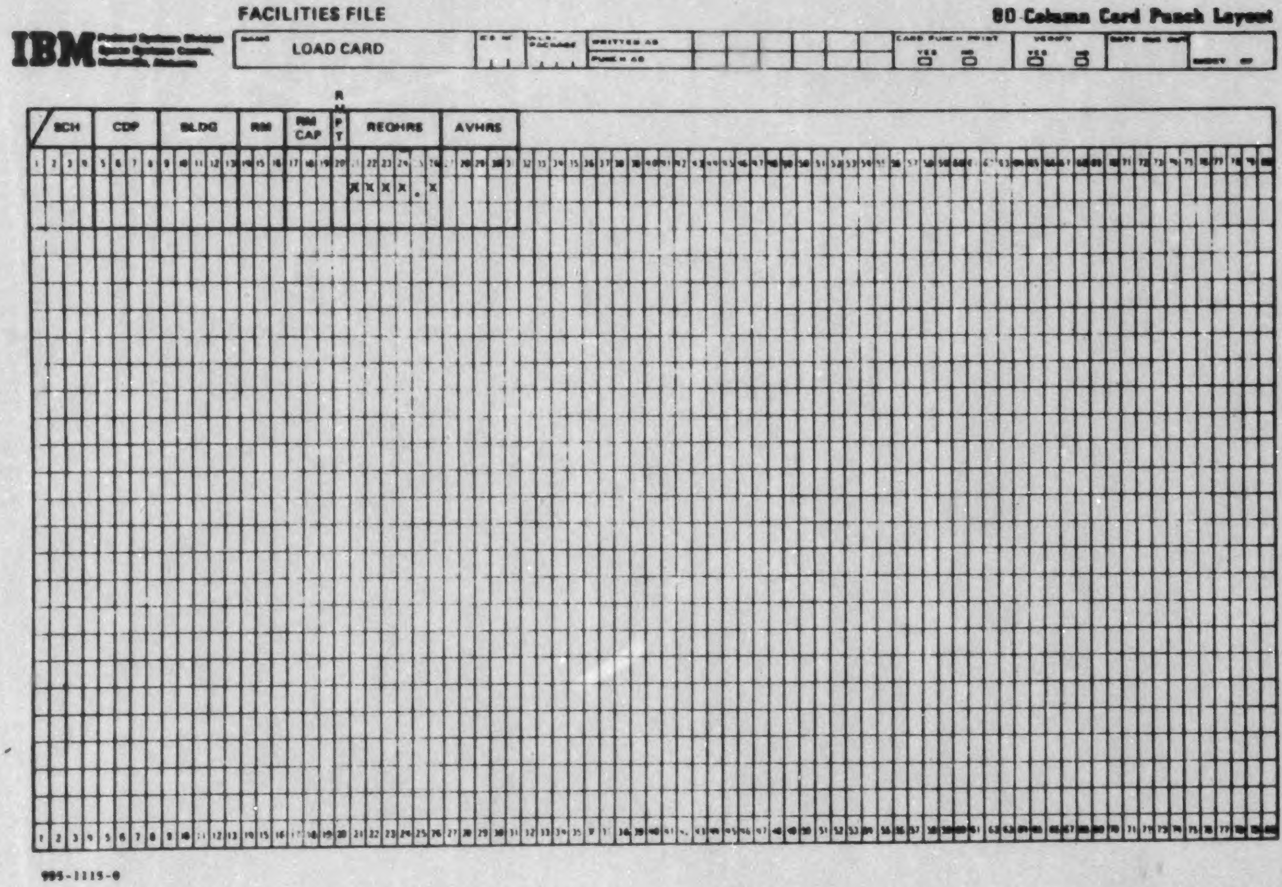
If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E3

FILE: Facilities

FUNCTION: Load the Facilities Master Data Base From Card Input

FACILITIES DATA BASE LOAD CARD FORMAT


FACILITIES FILE
IBM
LOAD CARD
80 Column Card Punch Layout
SCH
CDP
BLDG
RM
RM CAP
R
P
T
REQHRS
AVHRS
X X X X . X
995-1115-0

EXECUTIVE: E4

FILE: Facilities

FUNCTION: Terminal (Display)
Dump of Data Base
Contents

This Executive causes a standard RAMIS system TABLE function dump of the total contents of the Facilities data base. No further User input is required once this Executive is invoked. The following entry initiates run of this Executive.

```
e4        (CR)
```

SAMPLE TERMINAL RUN OF EXECUTIVE E4

```
15.30.24 E4
±
NUMBER OF RECORDS IN TABLE=    194  LINES=   194

PAGE       1


SCH     CDP     BLDG     RM     RMCAP    RMTP    REQHRS    AVHRS
---     ---     ----     --     -----    ----    ------    -----

AC&R    3102    KBB      B        16      1        27.0     2080
                KBB      E        16      3        51.0     2080
                KBB      F        16      3        30.0     2080
                KBB      G        16      2        18.0     2080
                KBB      H        16      2         9.0     2080
                KBB      J        16      2         9.0     2080
                KBB      K        16      2        15.0     2080
                KBB      L        16      2         9.0     2080
                KBB      M        16      1        32.0     2080
                KBB      N        16      2        19.0     2080
        4695    KBB      F        18      3        30.0     2080
        536N    KBB      D        18      3        40.0     2080
        5360    KBB      D        18      3        42.0     2080

ASW     461V    N-30     180      10      3        42.0     2080
        510G    N-30     106      12      1        33.0     2080
                N-30     107      18      2        27.0     2080
        510V    N-30     181      10      3        30.0     2080
        510W    FLTLN    HGR      10      2        12.0     2080
                N-30     181      10      3         6.0     2080
        5107    N-19A    120      10      1        40.0     2080
                N-19A    122      16      2        20.0     2080
        536K    N-30     167      10      3        20.0     2080
        536P    N-30     180      10      3        43.0     2080
        5698    N-30     108      18      1        40.0     2080
                N-30     107      18      2       110.0     2080
```

EXECUTIVE: E36

FILE: Facilities Master Data Base,
Facilities Scratch Data Base

FUNCTION: Erase and Remake the Facilities Scratch Data Base by Copying the Records of One Selected School From the Facilities Master

EXECUTIVE TYPE

Executive E36 serves to copy all of the records associated with a User-selected school from the Facilities Master Data Base into the Facilities Scratch Data Base.

Executive E36 is invoked via the following CSS-mode entry:

```
E36    (CR)
```

Upon invocation, this Executive will respond with a prompt line (see the example run, below) requesting that the name of the desired school be specified by the User. If, at this time, the following entry is made:

```
out    (CR)
```

action of Executive E36 will be aborted and no further data maintenance will result.

If the desired school name entry is made, Executive E36 will commence operation and no further action is required or solicited from the User.

Executive E36 begins operation by erasing any previous contents of the Instructor Scratch Data Base. At the completion of Executive E36 operations, any (if any) previous contents of the Facilities Scratch Data Base will be irrecoverably lost. The scratch data base will contain only those records associated with the selected school.

SAMPLE TERMINAL RUN OF EXECUTIVE E36

```
10.57.38 E36
* ENTER SCHOOL CODE (SCH), A4
HUGE
    NUMBER OF RECORDS DUMPED=        9
* HUGE SCHOOL DUMPED TO DISK FILE
          NUMBER OF RECORDS ENTERED=        9
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E9

FILE: Facilities Master Data Base,
Facilities Scratch Data Base

FUNCTION: Erase and Remake the Scratch
Data Base by Copying the Master
Data Base in its Entirety

EXECUTIVE TYPE

Executive E9 serves to copy intact all of the records of the Facilities master data base into the Facilities scratch data base.

Since all records are processed and transferred, the scratch data base will be an exact duplicate of the master after Executive E9 processing is completed.

Executive E9 begins operation by erasing any previous contents of the Facilities scratch data base. At the conclusion of Executive E9 operation, any (if any) previous contents of the Facilities scratch data base will be irrecoverably lost.

Executive E9 is invoked via the following entry:

```
e9   (CR)
```

Once this executive has commenced operation, no further action is requested or required from the User.

SAMPLE TERMINAL RUN OF EXECUTIVE E9

```
17.05.56 E9
!ALL SCHOOLS DUMPED FROM FACILITIES FILE
         NUMBER OF RECORDS ENTERED=      194
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: W1

FILE: Facilities Scratch Data Base

FUNCTION: Add A New School, and/or Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W1 is invoked by the following CCS Mode entry:

```
w1  (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                         CSS Mode Time Prompt
14.55.01  w1 (CR)
*
* FUNCTION - ADD A NEW COURSE...
*
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive W1 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W1 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

EXECUTIVE: W1

FILE: Facilities Scratch Data Base

FUNCTION: Add a New School, and/or Course

new (CR)

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *

followed by a repeat of the entry prompt text in its entirety.

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Facilities Scratch Data Base is depicted in the diagram below. Upon entry to the NEW mode, Executive W1 will issue terminal prompt messages for the Facilities Scratch Data Base data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

EXECUTIVE: W1

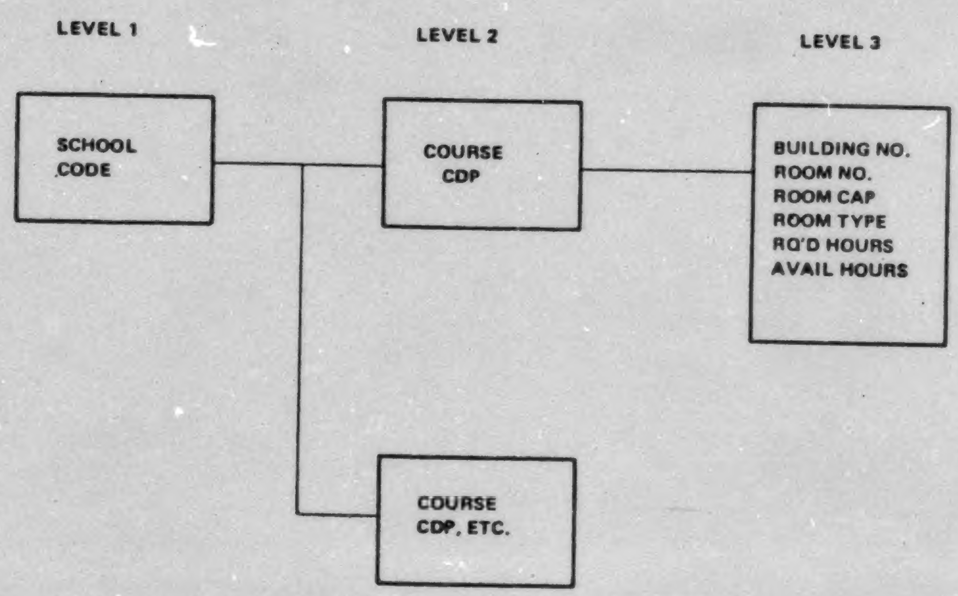
FILE: Facilities Scratch Data Base

FUNCTION: Add a New School, and/or Course

Data Fields Prompted by Executive W1

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W1

FILE: Facilities Scratch
Data Base

FUNCTION: Add a New School, and/
or Course

EXECUTIVE W1 SAMPLE RUN

```
  11.10.46 W1
* FUNCTION - ADD A NEW COURSE...
*
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_ABCDE
* MAX NUMBER CHARACTERS EXCEEDED *
*
* ENTER SCHOOL CODE (SCH), A4
_SCH1
*
* ENTER COURSE CDP (CDP), A4
_CDP1
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
          NUMBER OF RECORDS UPDATED=         0  INCLUDED=          1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W1 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W2

FILE: Facilities Scratch Data Base

FUNCTION: Add a New Facility to an Existing Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W2 is invoked by the following CCS Mode entry:

```
w2 (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                     CSS Mode Time Prompt
14.55.01   w2 (CR)
*
* FUNCTION - ADD NEW FACILITY TO AN EXISTING COURSE...
*
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive W2 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W2 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

EXECUTIVE: W2

FILE: Facilities Scratch Data Base

FUNCTION: Add a New Facility to an Existing Course

new CR

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Facilities Scratch Data Base is depicted in the diagram below. Upon entry to the NEW mode, Executive W2 will issue terminal prompt messages for the Facilities Scratch Data Base data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ no CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

EXECUTIVE: W2

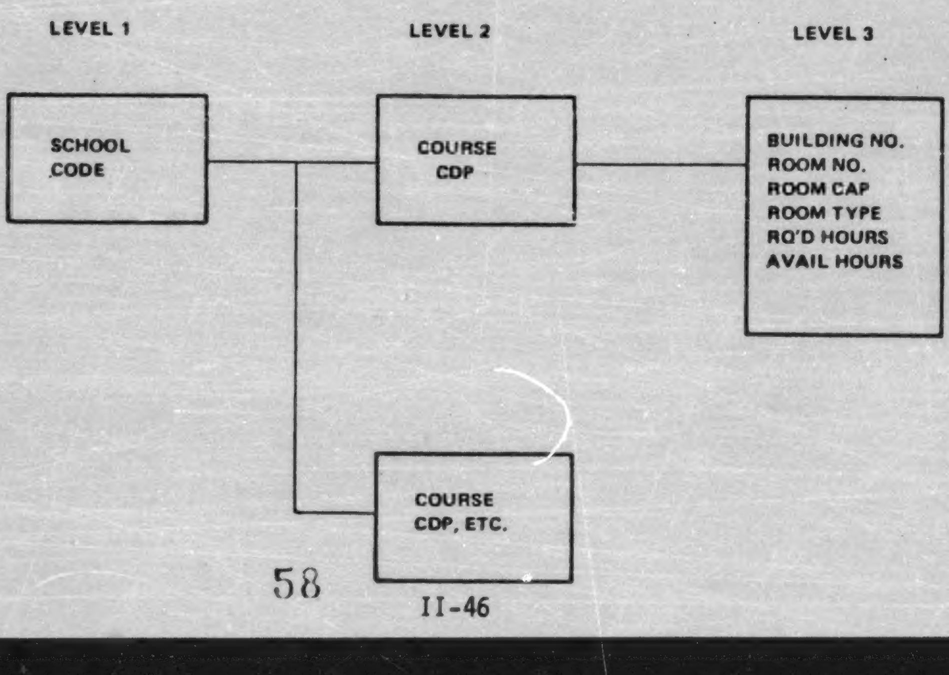
FILE: Facilities Scratch Data Base

FUNCTION: Add a New Facility to an Existing Course

Data Fields Prompted by Executive W2

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Building Number (BLDG), A5			
*	Room Number (RM), A3			
	Room Capacity (RMCAP), I3	0	0	200
	Room Type (RMTP), A1 1 = Lecture 2 = Lab 3 = Both	1		
	Required Hours (REQHRS), F6.1	0	0	3000
	Available Hours (AVHRS), I5	0	0	3000

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W2
FILE: Facilities Scratch Data Base
FUNCTION: Add a New Facility to an Existing Course

EXECUTIVE W2 SAMPLE RUN

```
11.17.24 W2
∷ FUNCTION - ADD NEW FACILITY TO AN
∷              EXISTING COURSE...
∷

∷ SPECIFY EITHER NEW OR CHANGE ∷
_NEW
∷

∷ ENTER SCHOOL CODE (SCH), A4
_AC&R
∷

∷ ENTER COURSE CDP (CDP), A4
_6XXX
∷

∷ ENTER BUILDING NUMBER (BLDG), A5
_KKK
∷

∷ ENTER ROOM NUMBER (RM), A3
_222
∷

∷ ENTER ROOM CAPACITY (RMCAP), I3
_N
∷

∷ ENTER ROOM TYPE (RMTP), A1
∷      1 = LECTURE, 2 = LAB, 3 = BOTH
_3
∷

∷ ENTER REQUIRED HOURS (REQHRS), F6.1
_40
∷

∷ ENTER AVAILABLE HOURS (AVHRS), I5
_N
∷

∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
         NUMBER OF RECORDS UPDATED=        0  INCLUDED=         1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W2 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W18

FILE: Facilities Scratch
Data Base

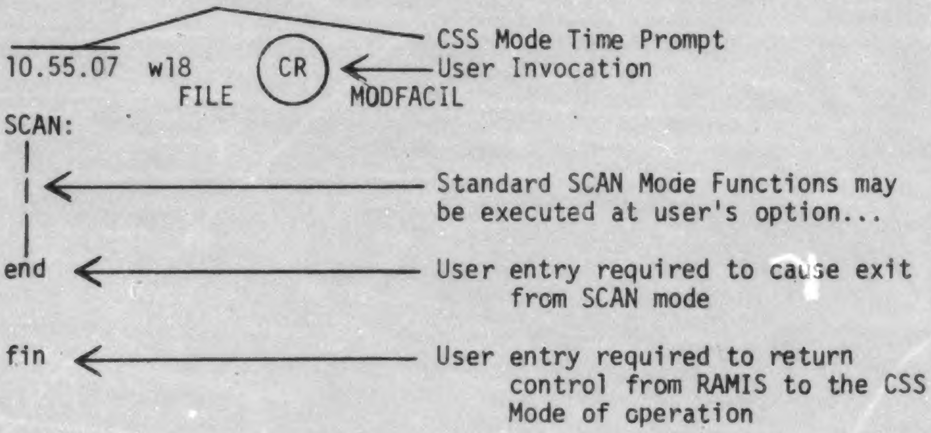
FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive W18 is invoked via the following technique:

```
w18    CR
```

Executive response to invocation will assume the following pattern:



```
10.55.07  w18      CR
             FILE     MODFACIL
SCAN:
end
fin
```

CSS Mode Time Prompt

User Invocation

Standard SCAN Mode Functions may be executed at user's option...

User entry required to cause exit from SCAN mode

User entry required to return control from RAMIS to the CSS Mode of operation

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

For the Facilities Scratch Data Base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	SCH	1	A	4
2	CDP	2	A	4
3	BLDG	3	A	5
	RM	4	A	3
	RMCAP	5	I	3
	RMTP	6	A	1
	REQHRS	7	F	6.1
	AVHRS	8	I	5

EXECUTIVE: W18

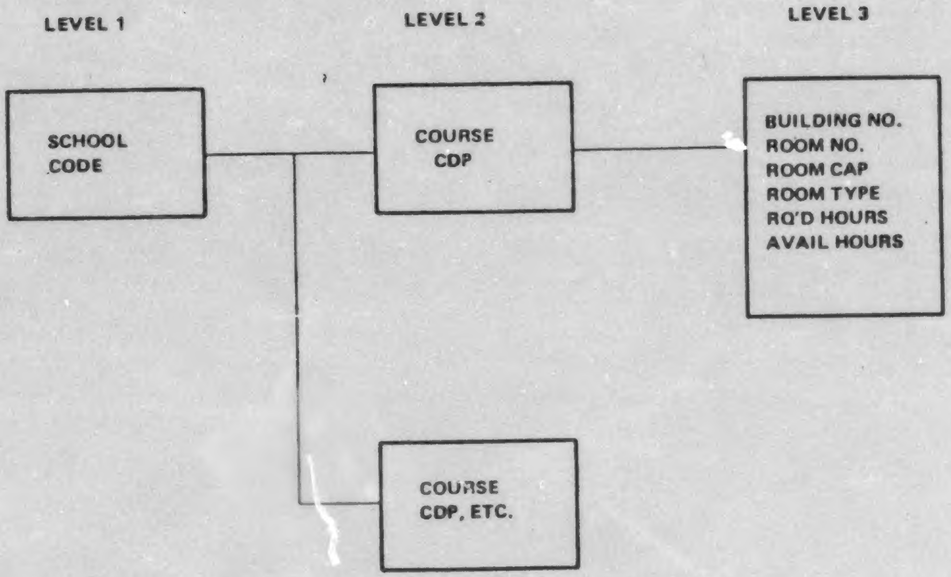
FILE: Facilities Scratch
Data Base

FUNCTION: Change an Existing Field

SAMPLE TERMINAL RUN OF EXECUTIVE W18

```
16.52.16 W18
±         FILE    MODFACIL
SCAN:
SHOW *
  01 SCH   02 CDP   03 BLDG 04 RM   05 RMCAP    06 RMTP 07 REQHRS   08 AVHRS
T
L 1=ASW,2=461V
 01=ASW  02=461V 03=N-30  04=180 05= 10 06=3 07=  42.0 08= 2080
C 4@2=±4XXX
WARNING... CHANGING KEY FIELD USED FOR SORT SEQUENCE
 01=ASW  02=4XXX 03=N-30  04=180 05= 10 06=3 07=  42.0 08= 2080
END
±FIN
```

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W15

FILE: Facilities Scratch
Data Base

FUNCTION: Delete a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W15 is invoked by the following CSS-Mode entry:

```
w15    (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (W15), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

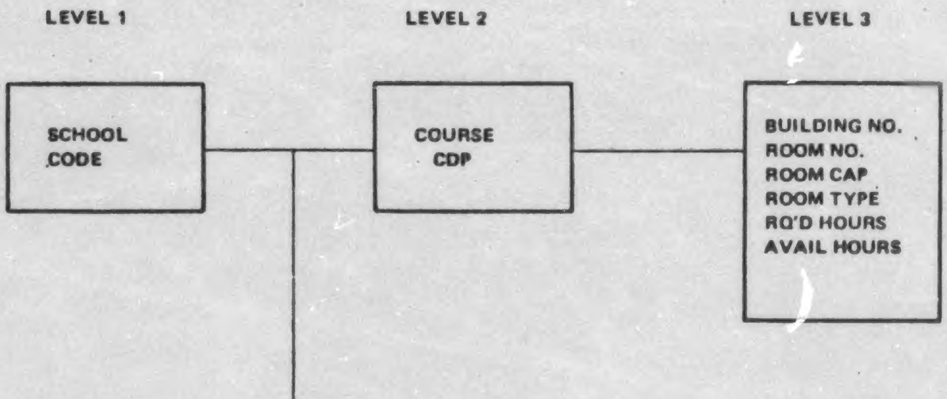
All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out    (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W15

FILE: Facilities Scratch Data Base

FUNCTION: Delete a Course

Data Fields Prompted by Executive W15

Field Name (Mnemonic), Data Type

School Code (SCH), A4

Course CDP Number (CDP), A4

SAMPLE TERMINAL RUN OF EXECUTIVE W15

```
17.12.15 W15
* FUNCTION - DELETE A COURSE
*
ENTER SCHOOL CODE (SCH), A4
ASW
*
* ENTER COURSE CDP (CDP), A4
510V
         RECORDS DELETED=      1SEGMENTS DELETED=      2
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W15 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

As an example of a terminal run of Executive W15 that resulted in RAMIS rejection of the data maintenance transaction, consider the following...

```
11.23.09 W15
* FUNCTION - DELETE A COURSE
ENTER SCHOOL CODE (SCH), A4
SCH1
*
* ENTER COURSE CDP (CDP), A4
CDPX
         CHANGES ENTERED=      0
```

EXECUTIVE: W16

FILE: Facilities Scratch Data Base

FUNCTION: Delete a Facility From a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W16 is invoked by the following CSS-Mode entry:

```
w16    (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (E16), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out    (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

EXECUTIVE: W16

FILE: Facilities Scratch
Data Base

FUNCTION: Delete a Facility
From a Course

Data Fields Prompted by Executive W16

Field Name (Mnemonic), Data Type

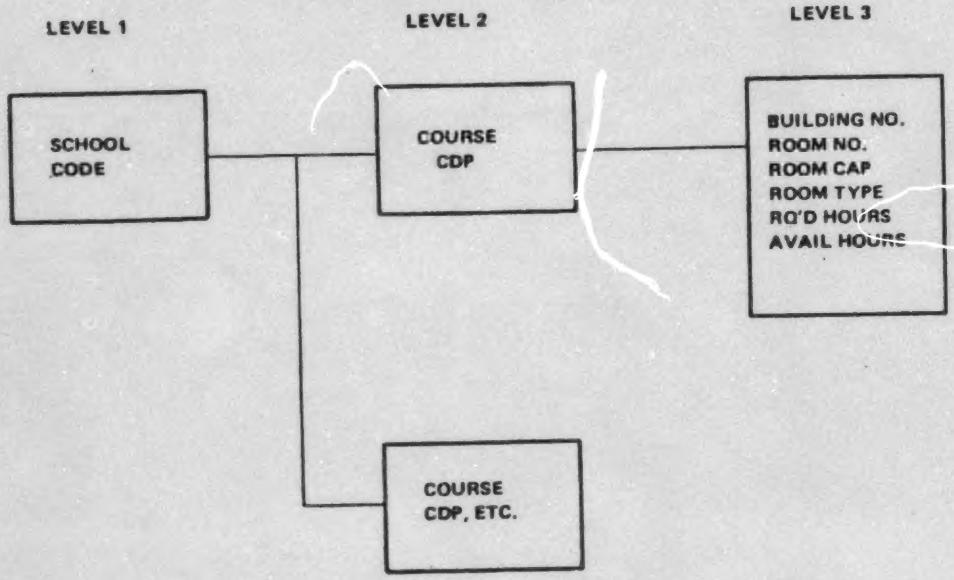
School Code (SCH), A4

Course CDP Number (CDP), A4

Building Number (BLDG), A5

Room Number (RM), A3

DOTS FACILITIES FILE – HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W16

FILE: Facilities Scratch
Data Base

FUNCTION: Delete a Facility
From a Course

SAMPLE TERMINAL RUN OF EXECUTIVE W16

```
17.39.52 W16
* FUNCTION - DELETE A FACILITY FROM A COURSE
*
* ENTER SCHOOL CODE (SCH), A4
AC&R
*
* ENTER COURSE CDP (CDP), A4
3102
*
* ENTER BUILDING NO (BLDG), A5
KBB
!*
* ENTER ROOM NO (RM), A3
B
        RECORDS DELETED=      1SEGMENTS DELETED=      1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W16 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W17

FILE: Facilities Scratch
Data Base

FUNCTION: Delete a School

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W17 is invoked by the following CSS-Mode entry:

w17 (CR)

Upon invocation, the Executive will produce entry text identifying the Executive number (W17), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

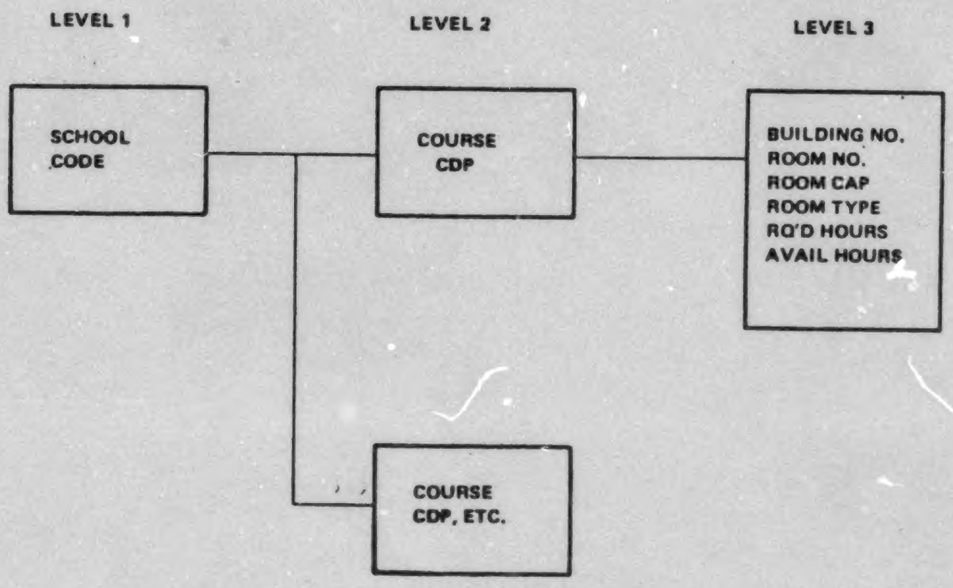
All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

out (CR)

will cause premature exit from the Executive without further data maintenance operations.

DOTS FACILITIES FILE — HIERARCHTIC STRUCTURE


LEVEL 1
LEVEL 2
LEVEL 3
SCHOOL CODE
COURSE CDP
BUILDING NO.
ROOM NO.
ROOM CAP
ROOM TYPE
RQ'D HOURS
AVAIL HOURS
COURSE CDP, ETC.

EXECUTIVE: W17

FILE: Facilities Scratch
Data Base

FUNCTION: Delete a School

Data Fields Prompted by Executive W17

Field Name (Mnemonic), Data Type

School Code (SCH), A4

SAMPLE TERMINAL RUN OF EXECUTIVE W17

```
17.30.27 W17
* FUNCTION - DELETE A SCHOOL
*
* ENTER SCHOOL CODE (SCH), A4
ASW
         RECORDS DELETED=     11SEGMENTS DELETED=     19
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W17 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E38

FILE: Facilities Scratch
Data Base

FUNCTION: Terminal (Display)
Dump of Data Base
Contents

This Executive causes a standard RAMIS system TABLE function dump of the total contents of the Facilities Scratch data base. No further User input is required once this Executive is invoked. The following entry initiates run of this Executive:

```
e38        CR
```

SAMPLE TERMINAL RUN OF EXECUTIVE E38

```
17.00.29 E38 .

NUMBER OF RECORDS IN TABLE=    197  LINES=  197

PAGE      1

SCH    CDP    BLDG    RM    RMCAP   RMTP   REQHRS   AVHRS
---    ---    ----    --    -----   ----   ------   -----

AC&R   3102   KBB     B       16     1       27.0    2080
              KBB     E       16     3       51.0    2080
              KBB     F       16     3       30.0    2080
              KBB     G       16     2       18.0    2080
              KBB     H       16     2        9.0    2080
              KBB     J       16     2        9.0    2080
              KBB     K       16     2       15.0    2080
              KBB     L       16     2        9.0    2080
              KBB     M       16     1       32.0    2080
              KBB     N       16     2       19.0    2080
       4695   KBB     F       18     3       30.0    2080
       5XXX                    0                 .0       0
       536N   KBB     D       18     3       40.0    2080
       5360   KBB     D       18     3       42.0    2080
       6XXX                    0                 .0       0
              KKK     222      0     3        4.0       0

ASW    4XXX   N-30    180     10     3       42.0    2080
       510G   N-30    106     12     1       33.0    2080
              N-30    107     18     2       27.0    2080
       510V   N-30    181     10     3       30.0    2080
       510W   FLTLN   HGR     10     2       12.0    2080
              N-30    181     10     3        6.0    2080
```

EXECUTIVE: E20

FILE: Instructor

FUNCTION: Add a New Instructor Plus Instructor Fixed Data

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E20 is invoked by the following CCS Mode entry:

```
e20    CR
```

Upon invocation, the Executive will produce the following entry text:

CSS Mode Time Prompt

```
14.55.01   e20    CR
*
* FUNCTION - ADD A NEW INSTRUCTOR
*     INSTRUCTOR FIXED DATA...
*
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out   CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change   CR
```

Use of this entry implies that Executive E20 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E20 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

EXECUTIVE: E20

FILE: Instructor

FUNCTION: Add a New Instructor Plus
Instructor Fixed Data

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor File is depicted in the diagram below. Upon entry to the NEW mode, Executive E20 will issue terminal prompt messages for the Instructor File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ no CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

new CR

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E20

FILE: Instructor

FUNCTION: Add a New Instructor Plus Instructor Fixed Data

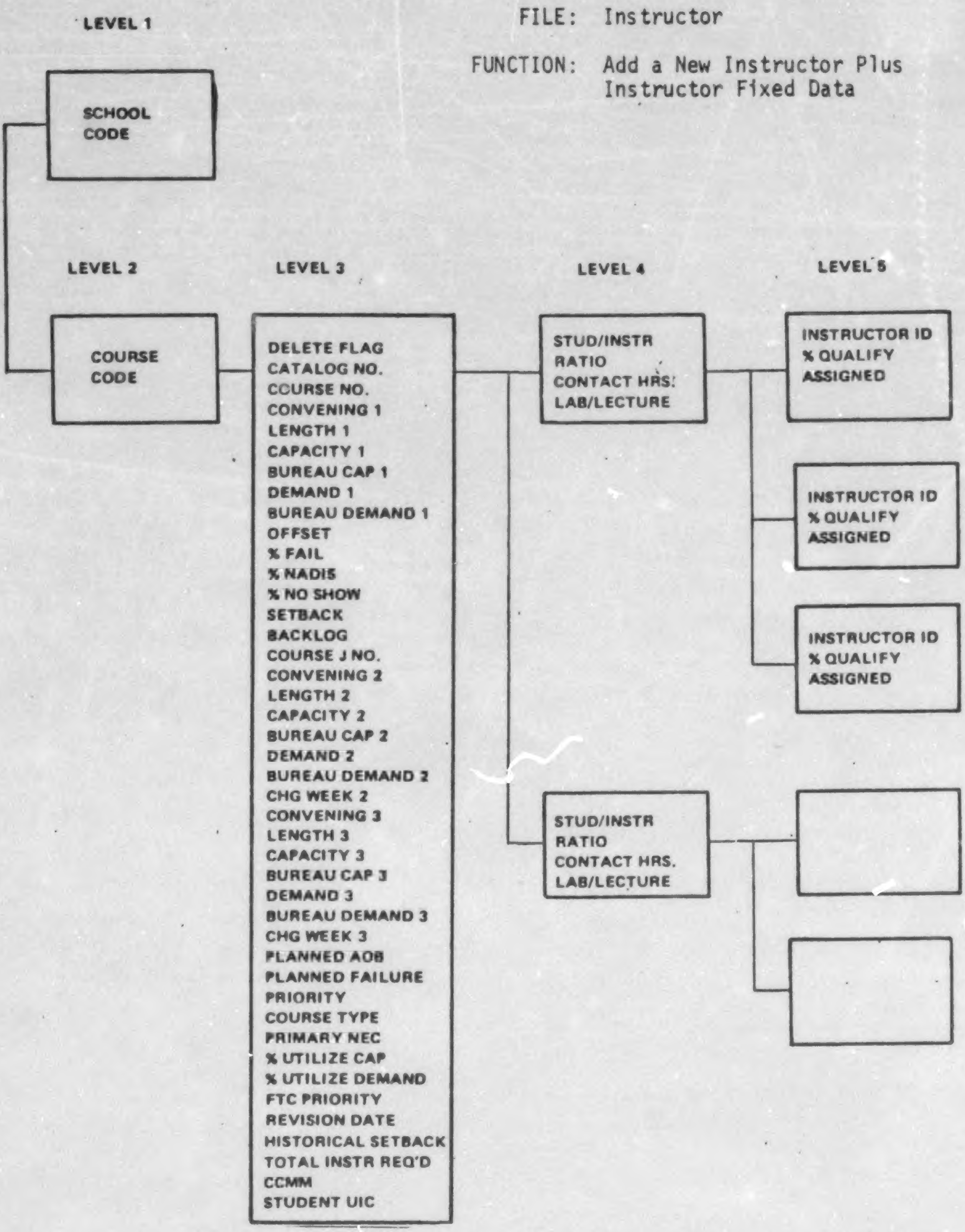
Data Fields Prompted by Executive E20

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Instructor Initials (IN), A2			
	Rate/Rating (RATE), A5	Blank		
*	School (SCH), A4			
	Reporting Date (REP), A4, YYMM	Blank		
	Rotation Date (ROT), A4, YYMM	Blank		
	Primary NEC (PNEC), A4	Blank		
	Secondary NEC (SNEC), A4	Blank		

EXECUTIVE: E20

FILE: Instructor

FUNCTION: Add a New Instructor Plus
Instructor Fixed Data


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E20

FILE: Instructor

FUNCTION: Add a New Instructor Plus
Instructor Fixed Data

SAMPLE TERMINAL RUN OF EXECUTIVE E20

```
16.20.04 E20
¤ FUNCTION - ADD A NEW INSTRUCTOR
¤ FILE - INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
¤
¤ ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740R0461
¤
¤ ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
¤
¤ ENTER INSTRUCTOR INITIALS (IN), A2
_JM
¤
¤ ENTER RATE/RATING (RATE), A5
_CIV
¤
¤ ENTER SCHOOL (SCH), A4
_LSU
¤
¤ ENTER REPORTING DATE (REP), A4, YYMM
_6905
¤
¤ ENTER ROTATION DATE (ROT), A4, YYMM
_7302
¤
¤ ENTER PRIMARY NEC (PNEC), A4
_YAYA
¤
¤ ENTER SECONDARY NEC (SNEC), A4
_NONO
¤
¤ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
            NUMBER OF RECORDS UPDATED=        0  INCLUDED=        1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E20 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E21

FILE: Instructor

FUNCTION: Assign a New Course to an
Instructor That Already
Exists in the File...

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E21 is invoked by the following CCS Mode entry:

```
e21    (CR)
```

Upon invocation, the Executive will produce the following entry text:

CSS Mode Time Prompt

```
14.55.01  e21    (CR)
*
* FUNCTION - ASSIGNS A NEW COURSE
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  (CR)
```

Use of this entry implies that Executive E21 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E21 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E21

FILE: Instructor

FUNCTION: Assign a New Course to an Instructor That Already Exists in the File...

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor File is depicted in the diagram below. Upon entry to the NEW mode, Executive E21 will issue terminal prompt messages for the Instructor File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

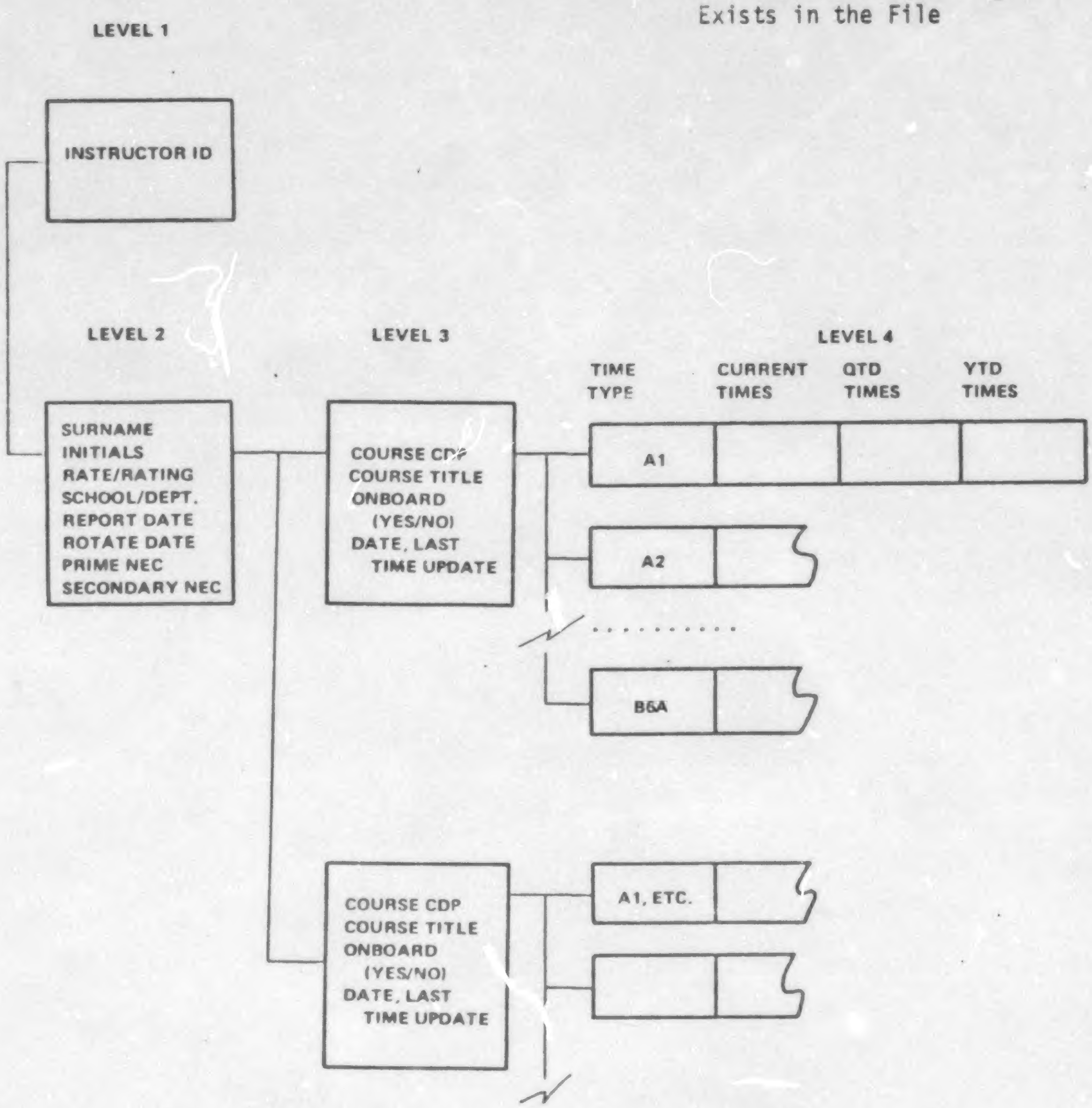
Data Fields Prompted by Executive E21

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Assigned Course CDP Number (CDP), A4			
	1 = Yes, 2 = No			

EXECUTIVE: E21

FILE: Instructor

FUNCTION: Assign a New Course to an Instructor That Already Exists in the File


LEVEL 1
INSTRUCTOR ID
LEVEL 2
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
LEVEL 3
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E21

FILE: Instructor

FUNCTION: Assign a New Course to an Instructor That Already Exists in the File

SAMPLE TERMINAL RUN OF EXECUTIVE E21

```
18.43.58 E21
* FUNCTION - ASSIGN A NEW COURSE
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
*
* ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
*
* ENTER ASSIGNED COURSE CDP (CDP), A4
_5XXX
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
          NUMBER OF RECORDS UPDATED=        0  INCLUDED=       14
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E21 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E55

FILE: Instructor

FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive E55 is invoked via the following technique:

```
e55    CR
```

Executive response to invocation will assume the following pattern:

```
                                            CSS Mode Time Prompt
10.55.07   e55   CR  <----------------------User Invocation
              FILE    INST
SCAN:
  |
  |  <-------------------------------------Standard SCAN Mode Functions may
  |                                        be executed at user's option...
  |
end  <-------------------------------------User entry required to cause exit
                                               from SCAN mode

fin  <-------------------------------------User entry required to return
                                               control from RAMIS to the CSS
                                               Mode of operation
```

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

For the Instructor data base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	ID	2	A	9
2	NME	2	A	16
	IN	3	A	2
	RATE	4	A	5
	SCH	5	A	4
	REP	6	A	4
	ROT	7	A	4
	PNEC	8	A	4
	SNEC	9	A	4

(Continued)

EXECUTIVE: E55

FILE: Instructor

FUNCTION: Change an Existing Field

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
3	CDP	10	A	4
	TTL	11	A	16
	ONB	12	A	1
	LDTE	13	I	6
4	TT	14	A	3
	CW	15	F	3.1
	QTD	16	F	5.1
	YTD	17	F	6.1

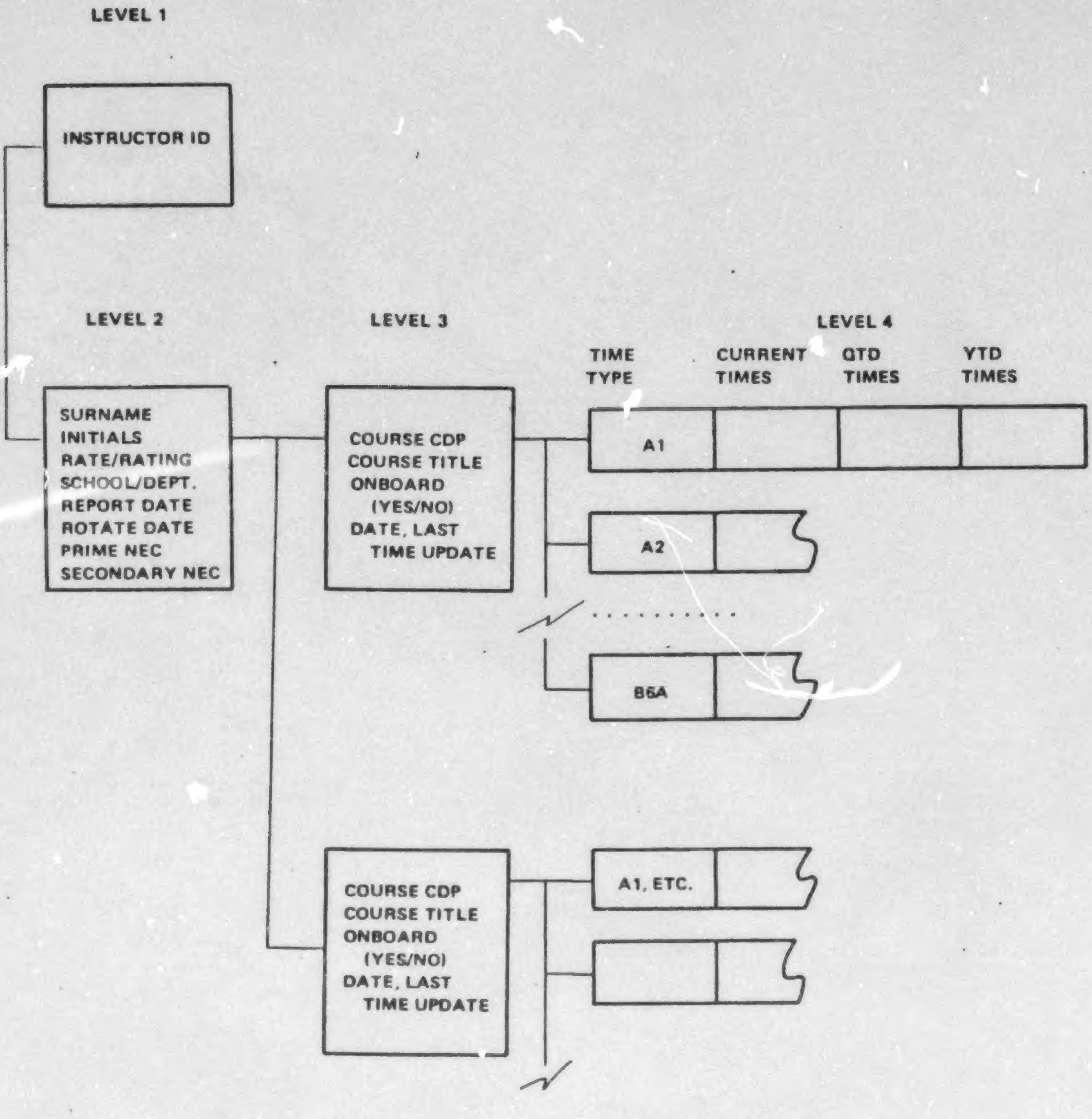
TERMINAL RUN SAMPLE OF EXECUTIVE E55

```
20.10.32 E55

RAMIS  --  VERSION 5.4 M10  -- 16SEP74

±         FILE    INST
SCAN:
SHOW
  01 ID   02 NME   03 IN   04 RATE 05 SCH   06 REP   07 ROT   08 PNEC 09 SNEC 10 CDP
  11 TTL  12 ONB  13 LDTE 14 TT    15 CW
  16 QTD  17 YTD
L 2=MCEWEN
 01=289362215 02=MCEWEN               03=R  04=SK1   05=S/DA 06= 473 07= 576 08=2815
 09=9502 10=
  11=                   12=  13=      0 14=    15=  .0 16=   .0 17=    .0
C 1=±189362215
WARNING... CHANGING KEY FIELD USED FOR SORT SEQUENCE
 01=189362215 02=MCEWEN               03=R  04=SK1   05=S/DA 06= 473 07= 576 08=2815
 09=9502 10=
  11=                   12=  13=      0 14=    15=  .0 16=   .0 17=    .0
L 1¢T
L 1=303367761
 01=303367761 02=KITCHELLL            03=R  04=ETC    05=ET    06=1170 07= 575 08=1598
 09=9502 10=
  11=                   12=  13=      0 14=    15=  .0 16=   .0 17=    .0
C 2=±KITCHELL
 01=303367761 02=KITCHELL             03=R  04=ETC    05=ET    06=1170 07= 575 08=1598
 09=9502 10=
  11=                   12=  13=      0 14=    15=  .0 16=   .0 17=    .0
 END
 ±FIN
```

EXECUTIVE: E55

FILE: Instructor

FUNCTION: Change an Existing Field


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E53

FILE: Instructor

FUNCTION: Delete a Course From an
Instructor That Already
Exists in the File...

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E53 is invoked by the following CCS Mode entry:

```
e53     CR
```

Upon invocation, the Executive will produce the following entry text:

```
                                CSS Mode Time Prompt
14.55.01 e53     CR
*
* FUNCTION - DELETE A COURSE FROM AN INSTRUCTOR

* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  CR
```

Use of this entry implies that Executive E53 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E53 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

EXECUTIVE: E53

FILE: Instructor

FUNCTION: Delete a Course From an
Instructor That Already
Exists in the File...

Any other entry made at this time will elicit the following prompt program response:

* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *

followed by a repeat of the entry prompt text in its entirety.

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor File is depicted in the diagram below. Upon entry to the NEW mode, Executive E53 will issue terminal prompt messages for the Instructor File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ no CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

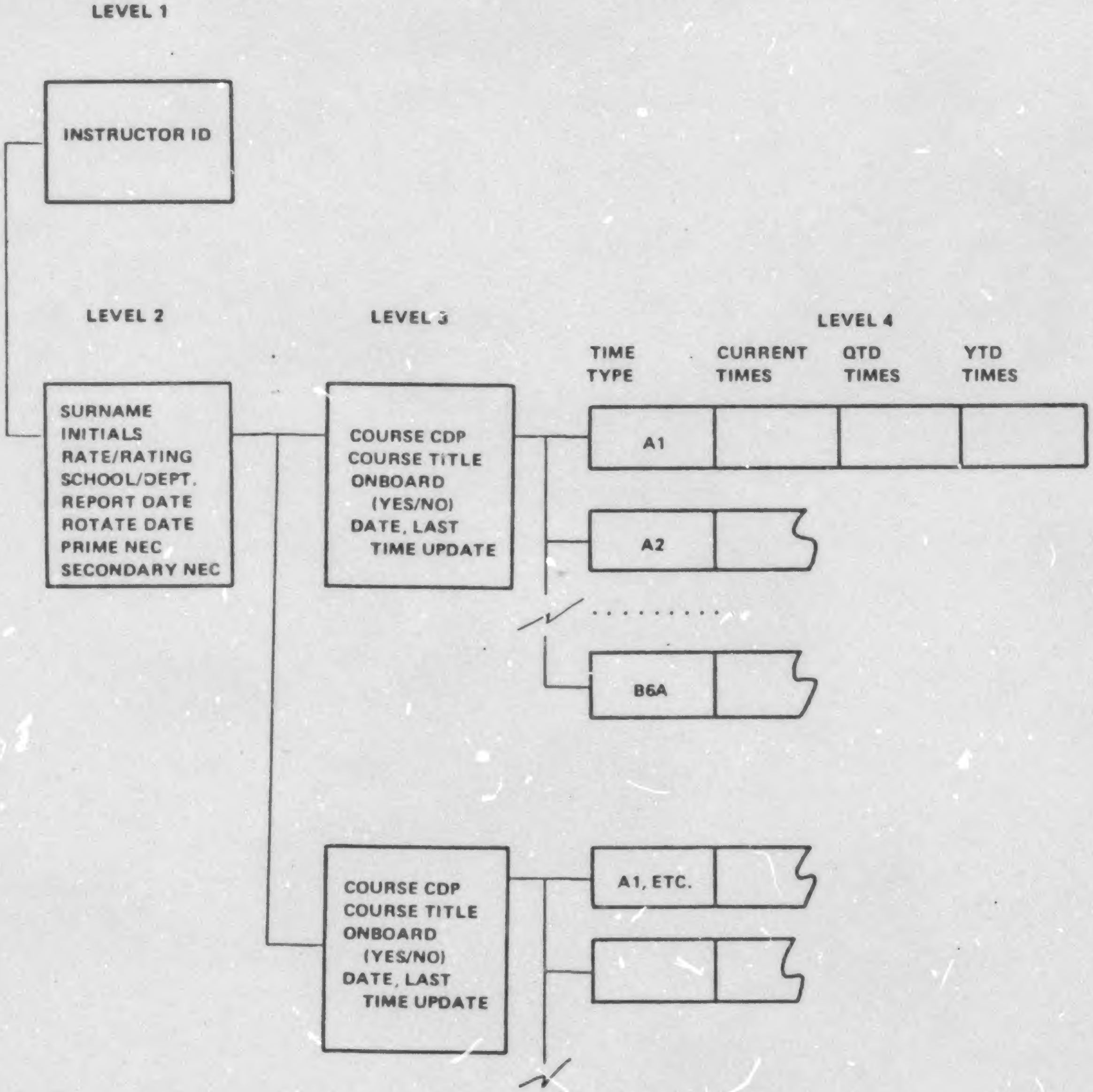
will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Assigned Course CDP Number (CDP), A4			

EXECUTIVE: E53

FILE: Instructor

FUNCTION: Delete a Course From an Instructor That Already Exists in the File


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E53

FILE: Instructor

FUNCTION: Delete a Course From an Instructor That Already Exists in the File

SAMPLE TERMINAL RUN OF EXECUTIVE E53

```
14.15.16  E53
* FUNCTION - DELETE A COURSE FROM AN INSTRUCTOR
*
* SPECIFY NEW OR CHANGE *
-NEW
*
* ENTER INSTRUCTOR SOC SEC # (ID), A9
_056323210
*
* ENTER INSTRUCTOR SURNAME (NME), A16
_JENKINS
*
* ENTER ASSIGNED COURSE CDP (CDP), A4
 304U
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
        RECORDS DELETED=      14SEGMENTS DELETED=      15
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the E53 run.

If the RAMIS messages indicate that zero records/segments have been deleted, you may assume that RAMIS found the transaction in error and has rejected the data maintenance request

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E54

FILE: Instructor

FUNCTION: Delete an Instructor
That Already Exists
in the File

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E54 is invoked by the following CCS Mode entry:

```
e54    (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                              CSS Mode Time Prompt
14.5501    e54    (CR)
*
* FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  (CR)
```

Use of this entry implies that Executive E54 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E54 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E54

FILE: Instructor

FUNCTION: Delete an Instructor
That Already Exists
in the File

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor File is depicted in the diagram below. Upon entry to the NEW mode, Executive E54 will issue terminal prompt messages for the Instructor File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field([illegible]) will be defaulted.

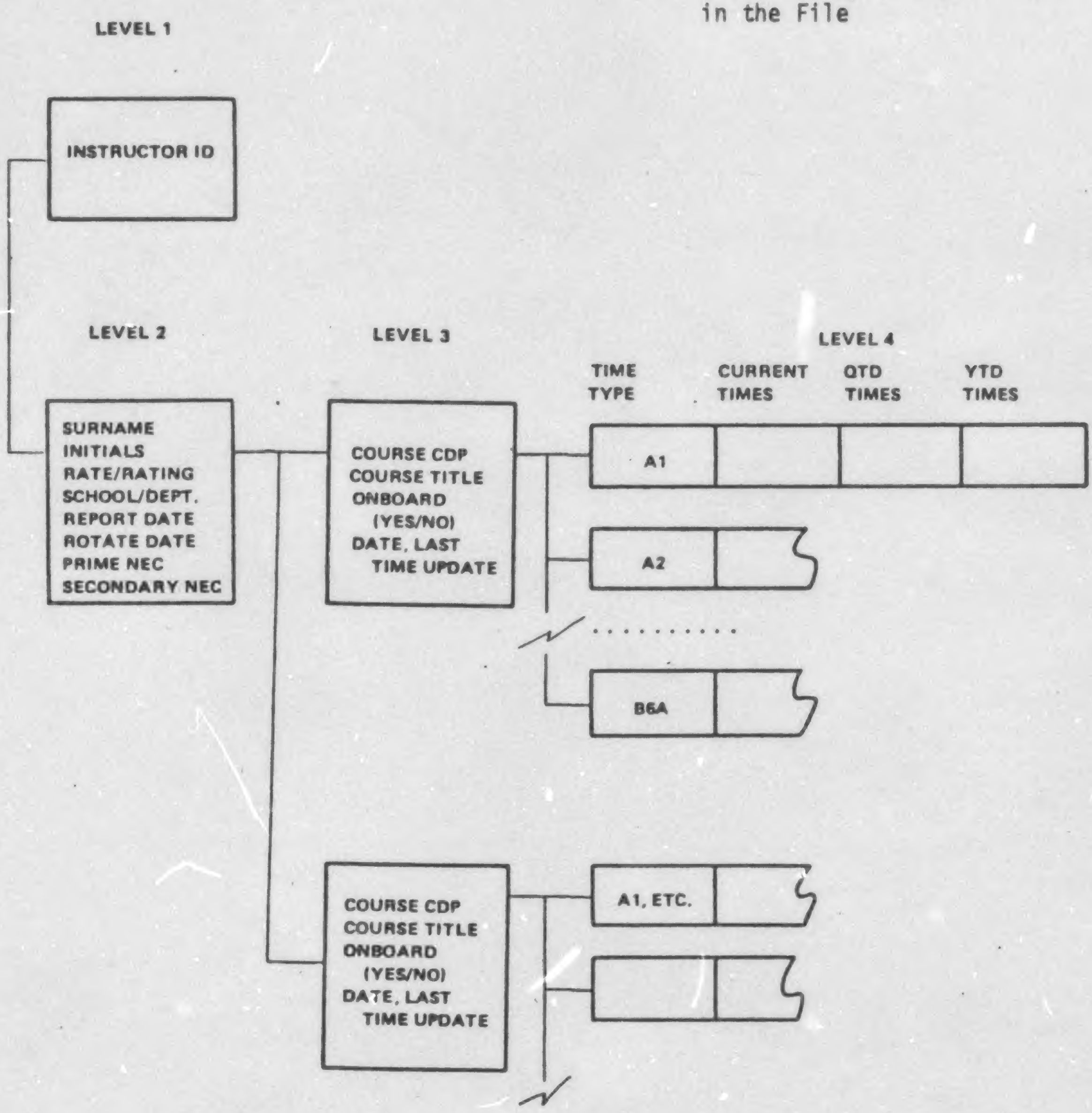
Data Fields Prompted by Executive E54

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			

EXECUTIVE: E54

FILE: Instructor

FUNCTION: Delete an Instructor
That Already Exists
in the File


LEVEL 1
INSTRUCTOR ID
LEVEL 2
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
LEVEL 3
COURSE CDP
COURSE TITLE
ONBOARD
(YES/NO)
DATE, LAST
TIME UPDATE
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD
(YES/NO)
DATE, LAST
TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E54

FILE: Instructor

FUNCTION: Delete an Instructor
That Already Exists
in the File

SAMPLE TERMINAL RUN OF EXECUTIVE E54

```
14.14.12 E54
:: FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
::
:: ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
::
:: ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
:: TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
       RECORDS DELETED=     15SEGMENTS DELETED=     19
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E54 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E23

FILE: Instructor

FUNCTION: Load the Instructor Master
Data Base from Card Input

EXECUTIVE TYPE

The Instructor master data base is loaded from scratch by using the following Executive routines:

Executive	Input Card Format	Input Data Content
E23	Instructor File, TYPE -1- Input Card	Instructor fixed information
E24	Instructor File, Type -2- Input Card	Instructor Assignment Information

In the normal load sequence, Executive E23 must have been successfully executed before attempting Executive E24 operations.

The format of the card input data set associated with Executive E23 is illustrated in the diagram below entitled "Instructor Data Base Type -1- Input Card Format". The actual punched cards that make up this input data set must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read in the NCSS computer system via a remote card reader.

Input to Executive E23 is named:

Filename = E23

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation Executive E23 will indicate via an error message if the input data set E3 DATA is not present.

Executive E23 is invoked by the following terminal keyboard entry:

```
e23     (CR)
```

Once Executive E23 has successfully located its input data set and commenced load operations, no further action on the part of the user is required or requested.

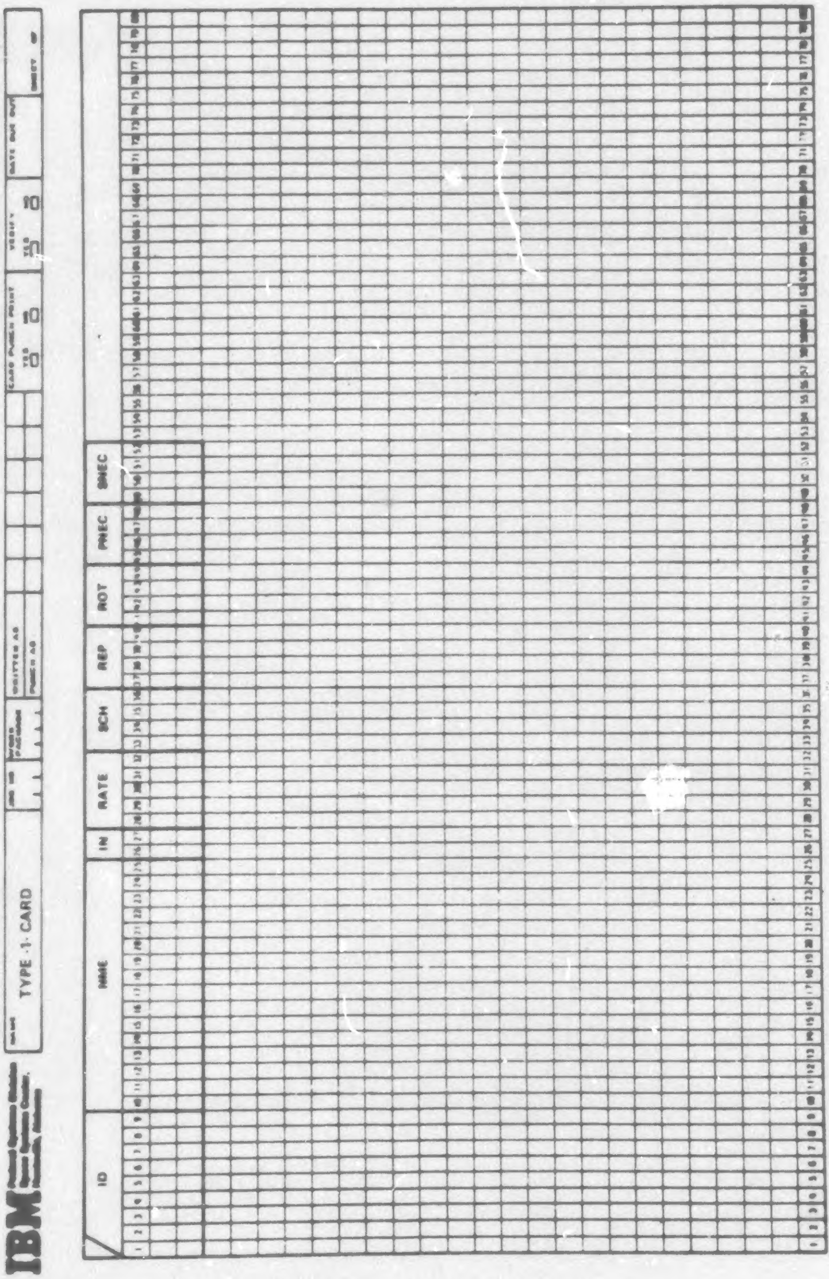
TAEG REPORT NO. 30

EXECUTIVE: E23

FILE: Instructor

FUNCTION: Load the Instructor Master
Data Base from Card Input

INSTRUCTOR DATA BASE TYPE -1- INPUT CARD FORMAT


IBM
INSTRUCTOR FILE
TYPE -1- CARD
80 Column Card Punch Layout
ID
NAME
IN
RATE
SCH
REP
ROT
PNEC
SNEC

EXECUTIVE: E24

FILE: Instructor

FUNCTION: Load the Instructor Master
Data Base from Card Input

EXECUTIVE TYPE

The Instructor master data base is loaded from scratch by using the following Executive routines:

Executive	Input Card Format	Input Data Content
E23	Instructor File, TYPE -1- Input Card	Instructor fixed information
E24	Instructor File, TYPE -2- Input Card	Instructor Assignment Information

In the normal load sequence, Executive E23 must have been successfully executed before attempting Executive E24 operations.

The format of the card input data set associated with Executive E24 is illustrated in the diagram below entitled "Instructor Data Base Type -2- Input Card Format". The actual punched cards that make up this input data set must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read in the NCSS computer system via a remote card reader.

Input to Executive E24 is named:

Filename = E24

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation, Executive E24 will indicate via an error message if the input data set E24 DATA is not present.

Executive E24 is invoked by the following terminal keyboard entry:

```
e24        (CR)
```

Once Executive E24 has successfully located its input data set and commenced load operations, no further action on the part of the User is required or requested.

The TYPE -2- input cards used to enter Instructor assignment data into the Instructor master data base are also used to enter assignment data into the Course master data base. See the documentation for Executive E34.

EXECUTIVE: E24

FILE: Instructor

FUNCTION: Load the Instructor Master Data Base from Card Input

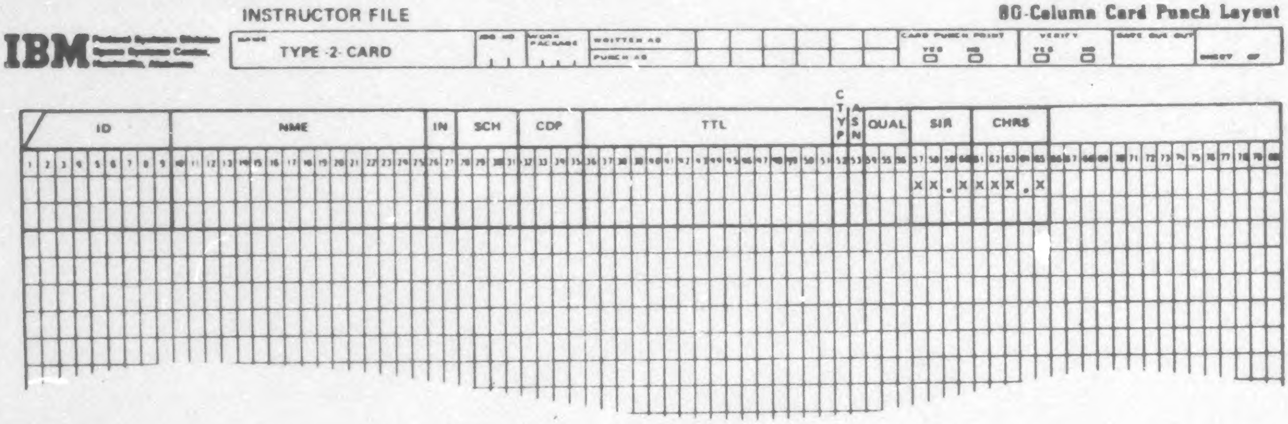
SAMPLE TERMINAL RUN OF EXECUTIVE E24

```
20.04.38 E24
*
* TOTAL # INSTRUCTOR TYPE -2- CARDS PROCESSED =     8 *
* TOTAL # INSTRUCTOR ASSIGNMENTS PROCESSED =     4 *
* UNASSIGNED RECORDS =      0 - DUPLICATE RECORDS SKIPPED =      4

        NUMBER OF RECORDS UPDATED=         0  INCLUDED=       42
```

If the number of records included is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

In entering an assignment to the Instructor file, fourteen time segments (A1 through A7, B1 through B6A) are created. Accordingly, the number of records included should be equal to 14 times the number of assignments processed.

INSTRUCTOR DATA BASE TYPE -2- INPUT CARD FORMAT



INSTRUCTOR FILE

80-Column Card Punch Layout

IBM

TYPE -2- CARD

ID	NME	IN	SCH	CDP	TTL	CTYP	ASN	QUAL	SIR	CHRS
1–9	10–25	26–27	28–31	32–35	36–51	52	53	54–56	57–60	61–65
									XX.X	XXX.X

EXECUTIVE: W20

FILE: Instructor Scratch
Data Base

FUNCTION: Add a New Instructor
Plus Instructor Fixed Data

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W20 is invoked by the following CSS Mode entry:

```
w20   (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                           CSS Mode Time Prompt
14.55.01   w20   (CR)

     * FUNCTION - ADD A NEW INSTRUCTOR


   * SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out   (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change   (CR)
```

Use of this entry implies that Executive W20 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W20 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

EXECUTIVE: W20

FILE: Instructor Scratch Data Base

FUNCTION: Add a New Instructor Plus Instructor Fixed Data

new (CR)

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *

followed by a repeat of the entry prompt text in its entirety.

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W20 will issue terminal prompt messages for the Instructor Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

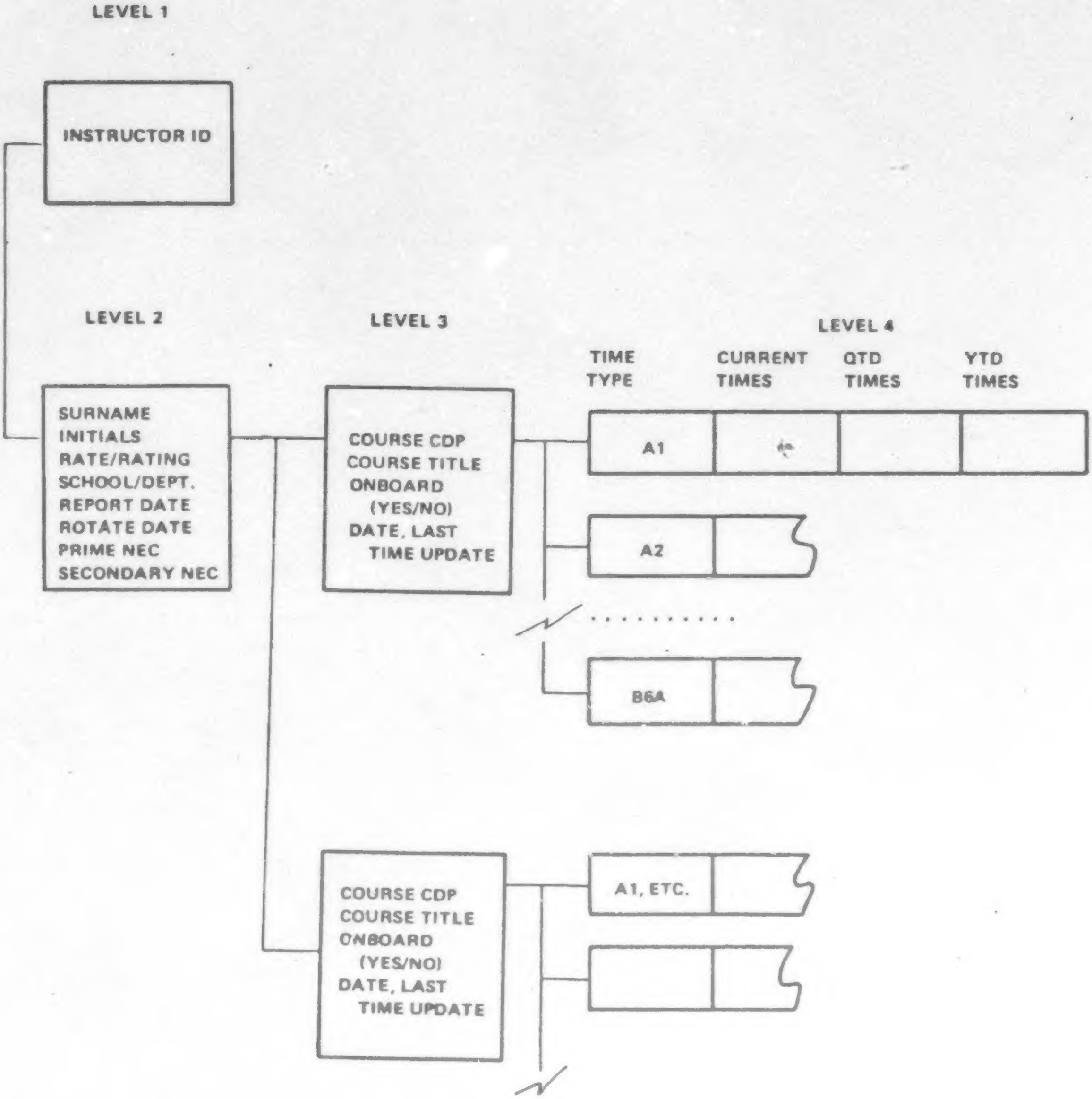
done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

EXECUTIVE: W20

FILE: Instructor Scratch Data Base

FUNCTION: Add a New Instructor
Plus Instructor Fixed Data


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W20

FILE: Instructor Scratch
Data Base

FUNCTION: Add a New Instructor
Plus Instructor Fixed Data

Data Fields Prompted by Executive W20

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Instructor Initials (IN), A2			
	Rate/Rating (RATE), A5	Blank		
*	School (SCH), A4			
	Reporting Date (REP), A4 YYMM	Blank		
	Rotation Date (ROT), A4, YYMM	Blank		
	Primary NEC (PNEC), A4	Blank		
	Secondary NEC (SNEC), A4	Blank		

SAMPLE TERMINAL RUN OF EXECUTIVE W20

```
 17.56.06 W20
*FUNCTION - ADD A NEW INSTRUCTOR
 * SPECIFY EITHER NEW OR CHANGE *

_NEW
∷
∷ ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
∷
∷ ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
∷
∷ ENTER INSTRUCTOR INITIALS (IN), A2
_JM
∷
```

EXECUTIVE. W20

FILE: Instructor Scratch
Data Base

FUNCTION: Add a New Instructor
Plus Instructor Fixed Da

SAMPLE TERMINAL RUN OF EXECUTIVE W20 (Continued)

```
∷ ENTER RATE/RATING (RATE), A5
_CIV
∷
∷ ENTER SCHOOL (SCH), A4
_LSU
∷
∷ ENTER REPORTING DATE (REP), A4, YYMM
 6409
 ∷
 ∷ ENTER ROTATION DATE (ROT), A4, YYMM
 _6809
 ∷
 ∷ ENTER PRIMARY NEC (PNEC), A4
 _N
 ∷
 ∷ ENTER SECONDARY NEC (SNEC), A4
 _DONE
 ∷
 ∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN

          NUMBER OF RECORDS UPDATED=        0  INCLUDED=        1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W20 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W53

FILE: Instructor Scratch Data Base

FUNCTION: Delete a Course From an Instructor that Already Exists in the Data Base...

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W53 is invoked by the following CCS Mode entry:

```
w53 (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                              CSS Mode Time Prompt
14.55.01   w53 (CR)
*
* FUNCTION - DELETE A COURSE
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive W53 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W53 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W53

FILE: Instructor Scratch Data Base

FUNCTION: Delete a Course From an Instructor That Already Exists in the Data Base...

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W53 will issue terminal prompt messages for the Instructor Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the QUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ no CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

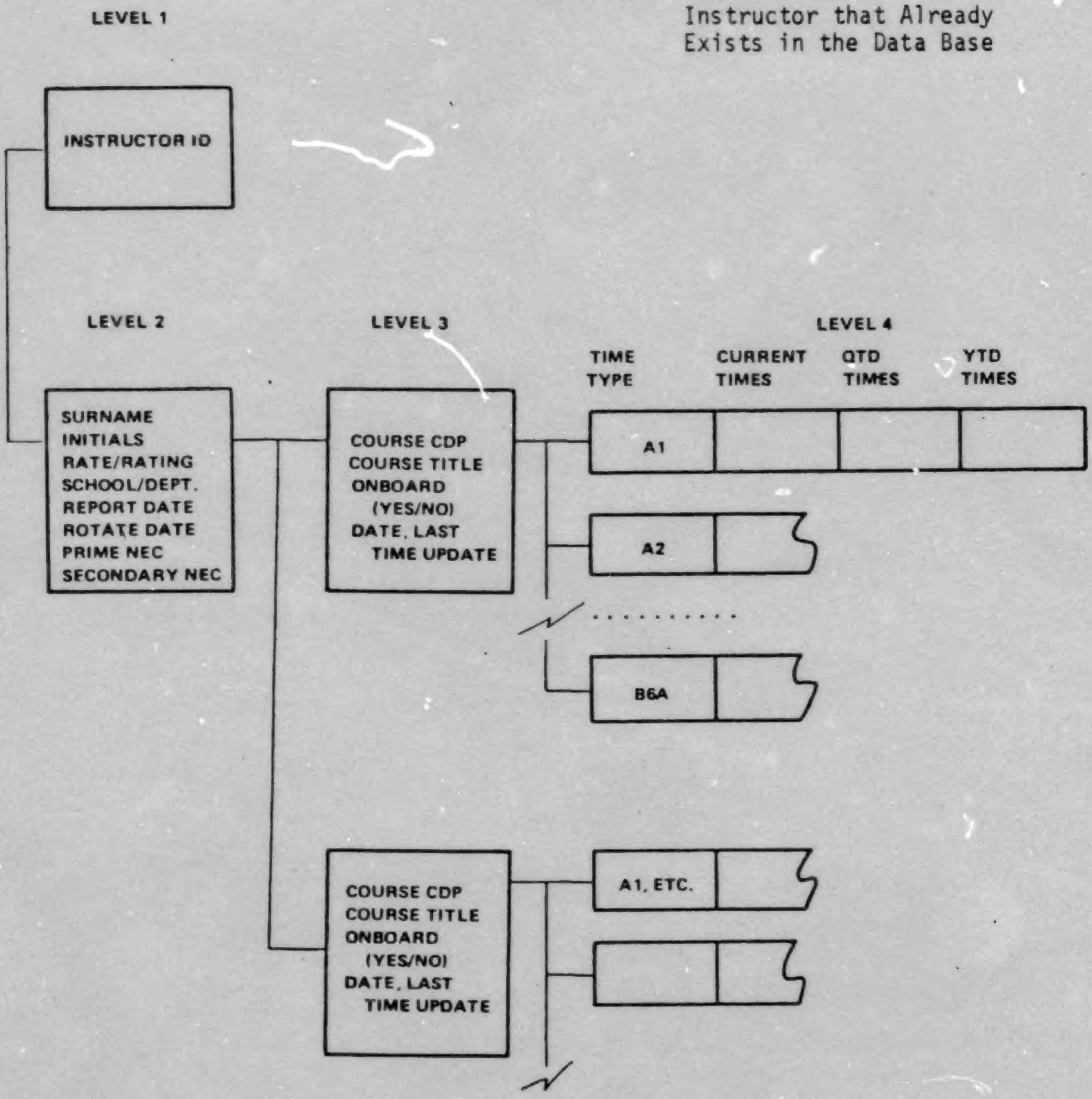
Data Fields Prompted by Executive W53

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Assigned Course CDP Number (CDP), A4			

EXECUTIVE: W53

FILE: Instructor Scratch Data Base

FUNCTION: Delete a Course From an Instructor that Already Exists in the Data Base


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W53

FILE: Instructor Scratch
Data Base

FUNCTION: Delete a Course from An
Instructor that Already
Exists in the Data Base

SAMPLE TERMINAL RUN OF EXECUTIVE W53

```
18.41.05 W53

 ∷ FUNCTION - DELETE A COURSE

* SPECIFY EITHER NEW OR CHANGE *
_NEW
∷

∷ ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
∷

∷ ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
∷

∷

∷ ENTER ASSIGNED COURSE CDP (CDP), A4
_5XXX
∷

∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN

          RECORDS DELETED=     13SEGMENTS DELETED=     14
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W53 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W21

FILE: Instructor Scratch
Data Base

FUNCTION: Assign a New Course to an
Instructor That Already
Exists in the File...

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W21 is invoked by the following CCS Mode entry:

```
w21    CR
```

Upon invocation, the Executive will produce the following entry text:

```
                               CSS Mode Time Prompt
14.55.01   w21   CR

* FUNCTION - ASSIGN A NEW COURSE

* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  CR
```

Use of this entry implies that Executive W21 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W21 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W21

FILE: Instructor Scratch Data Base

FUNCTION: Assign a New Course to an Instructor That Already Exists in the File...

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W21 will issue terminal prompt messages for the Instructor Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

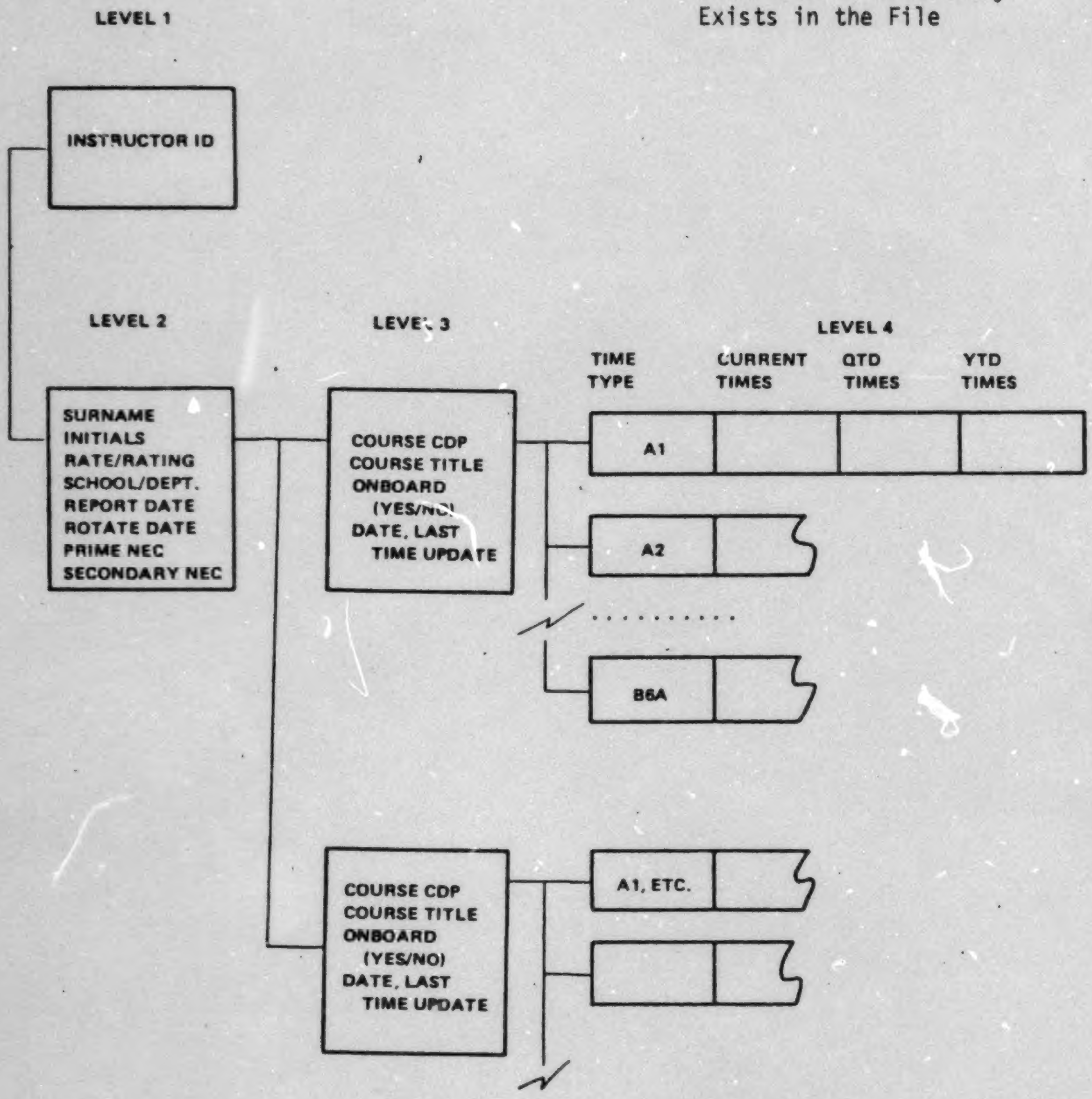
Data Fields Prompted by Executive W21

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			
*	Assigned Course CDP Number (CDP), A4			

EXECUTIVE: W21

FILE: Instructor Scratch Data Base

FUNCTION: Assign a New Course to an Instructor That Already Exists in the File


LEVEL 1
INSTRUCTOR ID
LEVEL 2
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
LEVEL 3
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W21

FILE: Instructor Scratch
Data Base

FUNCTION: Assign a New Course to An
Instructor that Already
Exists in the File

SAMPLE TERMINAL RUN OF EXECUTIVE W21

```
 16.23.16 W21

 * FUNCTION - ASSIGN A NEW COURSE

* SPECIFY EITHER NEW OR CHANGE *
_NEW
*

* ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
*

* ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
*

* ENTER ASSIGNED COURSE CDP (CDP), A4
 3XXX

* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
     NUMBER OF RECORDS UPDATED=         0  INCLUDED=        14
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W21 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W54

FILE: Instructor Scratch
Data Base

FUNCTION: Delete an Instructor
That Already Exists in
the File

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W54is invoked by the following CCS Mode entry:

```
w54   (CR)
```

Upon invocation, the Executive will produce the following entry text:

CSS Mode Time Prompt

```
14.55.01   w54   (CR)
*
* FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive W54 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W54 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W54

FILE: Instructor Scratch
Data Base

FUNCTION: Delete an Instructor That
Already Exists in the File

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Instructor Scratch Data Base File is depected in the diagram below. Upon entry to the NEW mode, Executive W54 will issue terminal prompt messages for the Instructor Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ nc CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

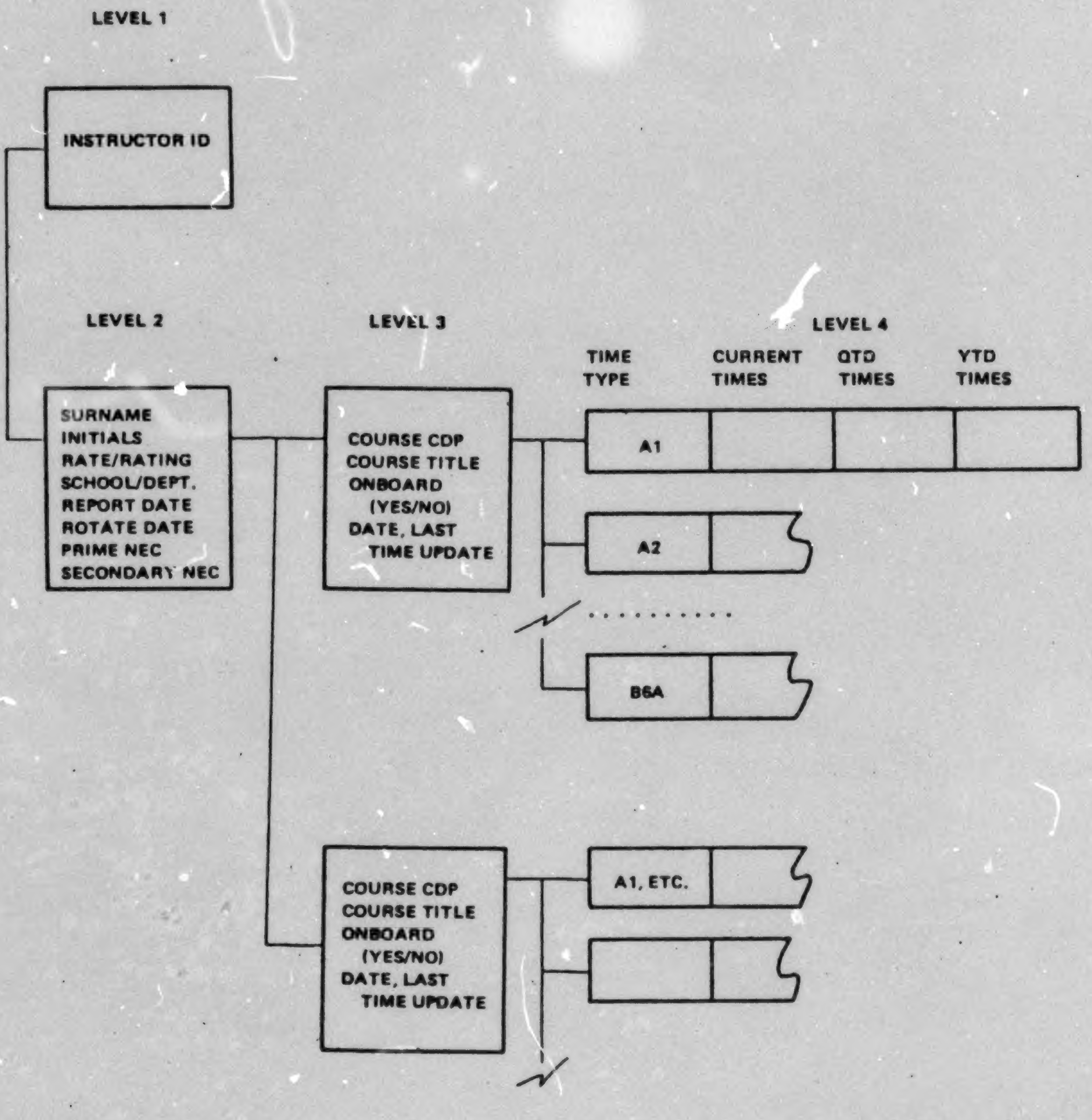
Data Fields Prompted by Executive W54

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	Instructor Social Security Number (ID), A9			
*	Instructor Surname (NME), A16			

EXECUTIVE: W54

FILE: Instructor Scratch Data Base

FUNCTION: Delete an Instructor
That Already Exists in
the File


LEVEL 1
INSTRUCTOR ID
LEVEL 2
LEVEL 3
LEVEL 4
TIME TYPE
CURRENT TIMES
QTD TIMES
YTD TIMES
SURNAME
INITIALS
RATE/RATING
SCHOOL/DEPT.
REPORT DATE
ROTATE DATE
PRIME NEC
SECONDARY NEC
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1
A2
B6A
COURSE CDP
COURSE TITLE
ONBOARD (YES/NO)
DATE, LAST TIME UPDATE
A1, ETC.

DOTS INSTRUCTOR FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W54

FILE: Instructor Scratch Data Base

FUNCTION: Delete an Instructor that already exists in the file

SAMPLE TERMINAL RUN OF EXECUTIVE W54

```
6.26.43 W54

:: FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
::
:: ENTER INSTRUCTOR SOC SEC # (ID), A9
_433740461
::
:: ENTER INSTRUCTOR SURNAME (NME), A16
_CHAPMAN
:: TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
          RECORDS DELETED=     15SEGMENTS DELETED=     19
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W54 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W55
FILE: Instructor Scratch Data Base
FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive W55 is invoked via the following technique:

```
W55     (CR)
```

Executive response to invocation will assume the following pattern:

```
                                   CSS Mode Time Prompt
10.55.07      w55   (CR) <--User Invocation
               FILE    MODINST

SCAN:
 |
 | <------------------------- Standard SCAN Mode Functions may be
 |                            executed at user's option...
 |
end <------------------------ User entry required to cause exit from
                                   SCAN mode

fin <------------------------ User entry required to return control from
                                   RAMIS to the CSS Mode of operation
```

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

EXECUTIVE: W55

FILE: Instructor Scratch Data Ba

FUNCTION: Change an Existing Field

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE (Continued)

For the Instructor Scratch data base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	ID	1	A	9
2	NME	2	A	16
	IN	3	A	2
	RATE	4	A	5
	SCH	5	A	4
	REP	6	A	4
	ROT	7	A	4
	PNEC	8	A	4
	SNEC	9	A	4
3	CDP	10	A	4
	TTL	11	A	16
	ONB	12	A	1
	LDTE	13	I	6
4	TT	14	A	3
	CW	15	F	3.1
	QTD	16	F	5.1
	YTD	17	F	6.1

```
13.07.56 W55
±          FILE      MODINST
SCAN:
SHOW *
  01 ID    02 NME   03 IN    04 RATE 05 SCH   06 REP   07 ROT
 08 PNEC 09 SNEC 10 CDP
 11 TTL   12 ONB   13 LDTE 14 TT    15 CW    16 QTD   17 YTD
SHOW 1,2,4
  01 ID    02 NME   04 RATE
T
L 1=242567014
 01=242567014 02=GEORGE               04=MMCS
C 4=±MMCM
 01=242567014 02=GEORGE               04=MMCM
END
±FIN
```

EXECUTIVE: E32

FILE: Instructor Master Data Base, Instructor Scratch Data Base

FUNCTION: Erase and Remake the Instructor Scratch Data Base by Copying the Records of One Selected School From the Instructor Master

EXECUTIVE TYPE

Executive E32 serves to copy all of the records associated with a User-selected school from the Instructor master data base into the Instructor scratch data base.

Executive E32 is invoked via the following CSS-mode entry:

```
e32 (CR)
```

Upon invocation, this Executive will respond with a prompt line (see the example run, below) requesting that the name of the desired school be specified by the User. If, at this time, the following entry is made:

```
out (CR)
```

action of Executive E32 will be aborted and no further data maintenance will result.

If the desired school name entry is made, Executive E32 will commence operation and no further action is required or solicited from the user.

Executive E32 begins operation by erasing any previous contents of the Instructor scratch data base. At the completion of Executive E32 operations, any (if any) previous contents of the Instructor scratch data base will be irrecoverably lost. The scratch data base will contain only those records associated with the selected school.

EXECUTIVE: E32

FILE: Instructor Master Data Base,
Instructor Scratch Data Base

FUNCTION: Erase and Remake the Instructo
Scratch Data Base by Copying
the Records of One Selected
School From the Instructor
Master

SAMPLE TERMINAL RUN OF EXECUTIVE E32

```
13.14.15  E32
* FUNCTION - SELECT INSTRUCTORS BY SCHOOL
*
* ENTER SCHOOL CODE (SCH), A4
ASW
      NUMBER OF RECORDS DUMPED=       223
      NUMBER OF RECORDS ENTERED=       223
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E27

FILE: Instructor Master Data Base,
Instructor Scratch Data Base

FUNCTION: Erase and Remake the Instructor
Scratch Data Base by Copying
the Instructor Master Data Base
in its Entirety

EXECUTIVE TYPE

Executive E27 serves to copy intact all of the records of the Instructor master data base into the Instructor scratch data base.

Since all records are processed and transferred, the scratch data base will be an exact duplicate of the master after Executive E27 processing is completed.

Executive E27 begins operation by erasing any previous contents of the Instructor scratch data base. At the conclusion of Executive E27 operation, any (if any) previous contents of the Instructor scratch data base will be irrecoverably lost.

Executive E27 is invoked via the following entry:

```
e27 (CR)
```

Once this Executive has commenced operation, no further action is requested or required from the User.

SAMPLE TERMINAL RUN OF EXECUTIVE E27

```
14.54.54 E27

NUMBER OF RECORDS DUMPED=    5385

        NUMBER OF RECORDS ENTERED=     5385
±±DEV 193 DETACHED
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E30

FILE: Instructor

FUNCTION: Terminal (Display)
Dump of all Data Base
Records Pertinent to
One School

This Executive causes a formatted dump of all of the records of the Instructor data base associated with one school. The Executive will prompt for the User entry of the desired school. Executive E30 is invoked via the following entry:

e30 (CR)

SAMPLE TERMINAL RUN OF EXECUTIVE E30

```
11.12.13  E30
* FUNCTION - SELECT INSTRUCTORS BY SCHOOL
*
* ENTER SCHOOL CODE (SCH), A4
COMM

        NUMBER OF RECORDS DUMPED=        375
```

```
    SCHOOL: COMM                   RATE: LTJG        REPORT:  773     PNEC:
INSTRUCTOR: RH FREDERICK             ID: X5          ROTATE:  776     SNEC:
--------------------------------------------------------------------------------
                      !                  !
    COURSE CDP:       ! COURSE CDP: 9463 !
    ONBOARD: NO       ! ONBOARD: NO      !
    LUDATE:   / 0/    ! LUDATE:   / 0/   !
    -CUR--QTD---YTD--! -CUR--QTD---YTD--!
A1                       .0     .0     .0!
A2                       .0     .0     .0!
A3                       .0     .0     .0!
A4                       .0     .0     .0!
A5                       .0     .0     .0!
A6                       .0     .0     .0!
A7                       .0     .0     .0!
                                         !
B1                       .0     .0     .0!
B2                       .0     .0     .0!
B3                       .0     .0     .0!
B4                       .0     .0     .0!
B5                       .0     .0     .0!
B6                       .0     .0     .0!
B6A                      .0     .0     .0!
```

EXECUTIVE: E35

FILE: Instructor Scratch Data Base

FUNCTION; Terminal (Display) Dump of All Data Base Records Pertinent to One School

This Executive causes a formatted dump of all of the records of the Instructor Scratch data base associated with one school. The Executive will prompt for the User entry of the desired school. Executive E35 is invoked via the following entry:

```
e35   (CR)
```

SAMPLE TERMINAL RUN OF EXECUTIVE E35

```
15.55.43  E35
* FUNCTION - SELECT INSTRUCTORS BY SCHOOL
*
*ENTER SCHOOL CODE (SCH), A4
COMM
```

```
    SCHOOL: COMM                         RATE: RM2        REPORT: 1272    PNEC:
INSTRUCTOR: RA SNYDER                      ID: 175424494  ROTATE:  676    SNEC: 9506
-------------------------------------------------------------------------------------------
                         !                      !                      !                      !
     COURSE CDP: 538R !  COURSE CDP: 512F !  COURSE CDP: 512H !  COURSE CDP: 512K !
     ONBOARD: YES        !  ONBOARD: YES         !  ONBOARD: YES         !  ONBOARD: YES         !
     LUDATE:    / 0/     !  LUDATE:    / 0/      !  LUDATE:    / 0/      !  LUDATE:    / 0/      !
     -CUR--QTD---YTD--!  -CUR--QTD---YTD--!  -CUR--QTD---YTD--!  -CUR--QTD---YTD--!
A1      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A2      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A3      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A4      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A5      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A6      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
A7      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
                          !                     !                     !                     !
B1      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
B2      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
B3      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
B4      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
B5      .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
B6      .0     .0       .0!   .0     .0       .0'   .0     .0       .0!   .0     .0       .0!
B6A     .0     .0       .0!   .0     .0       .0!   .0     .0       .0!   .0     .0       .0!
```

EXECUTIVE: E22A

FILE: Instructor Master

FUNCTION: Sort the Weekly Instructor Time Cards

WEEKLY INSTRUCTOR TIME CARDS

The weekly time cards are prepared following the card format illustrated on the diagram titled "Instructor Data Base Weekly Time Card Format."

Once the cards have been punched for a given week, they are to be collected into a batch and two header cards prepared. The complete time card deck will then be mailed to the National CSS time-share vendor for entry to the computer system. The mailing address is as follows:

NATIONAL CSS, INC.
Atlanta Office
250 Piedmont Street NE
Atlanta, Georgia 30312

The completed time-card deck will be structured as follows:

First: Mandatory Header Card
CC 1 - 2 = ID
CC 14 - 19 = IBMCKF

Second: Mandatory Header Card
CC 1 - 7 = OFFLINE
CC 9 - 12 = READ
CC 14 - 19 = TCARDS
CC 21 - 27 = Wyymmdd (date of time card deck)

Following: All subsequent cards will follow the standard Weekly Time Card format

EXECUTIVE TYPE

All Executives with names containing an E22-prefix are used in conjunction with the processing of weekly instructor time cards.

Executive E22A causes a selected week's time cards to be sorted in accordance with the following sort criteria:

Primary Sort Field: Instructor Name (card columns 1-9)

Secondary Sort Field: Course CDP Number (cc 14-17)

The output file produced by the sort is filename = E22, filetype = SORT. This file will be referred to later as file E22/SORT.

Executive E22A is initiated by the following CSS Mode entry:

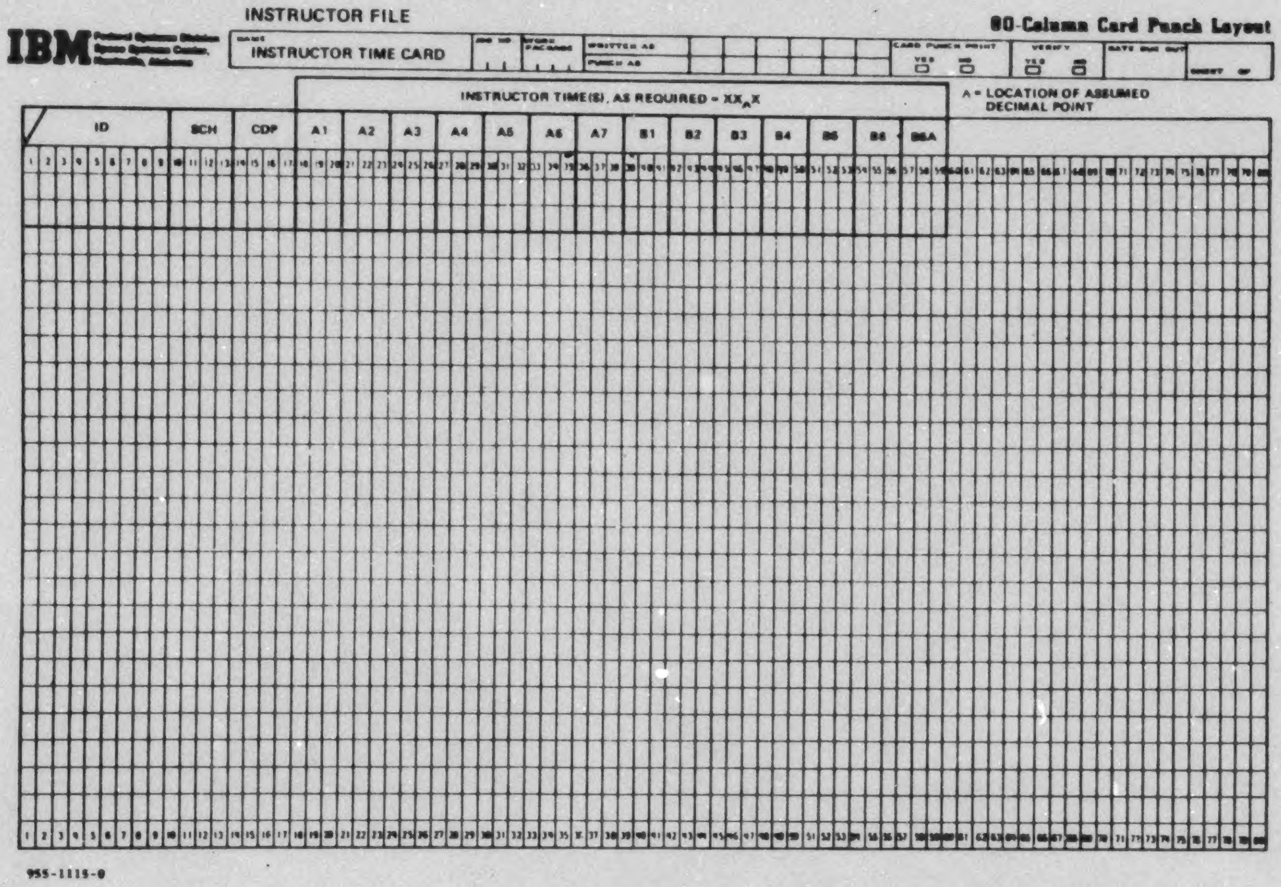
```
e22a    (CR)
```

Once invoked, the User will be prompted for the date of the time card file to be sorted. Each week's time cards will be stored in the NCSS system using the following terminology:

```
Filename = TCARDS

Filetype = Wyymmdd     /where/  yy = two digit year
                                mm = two digit month
                                dd = two digit day
```

Executive E22 will request the date in the format indicated above, i.e., Wyymmdd. Once the date has been provided, no further action on the part of the User will be required.

INSTRUCTOR DATA BASE WEEKLY TIME CARD FORMAT



IBM

INSTRUCTOR FILE

80-Column Card Punch Layout

NAME INSTRUCTOR TIME CARD	JOB NO	WORK PACKAGE	WRITTEN AS PUNCH AS	CARD PUNCH PRINT YES ☐ NO ☐	VERIFY YES ☐ NO ☐

DATE DUE OUT

SHEET OF

INSTRUCTOR TIME(S), AS REQUIRED = $XX_{\wedge}X$

$\wedge$ = LOCATION OF ASSUMED DECIMAL POINT

ID	SCH	CDP	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B6A

955-1115-0

EXECUTIVE: E22B

FILE: Instructor Master

FUNCTION: Initialize the Instructor Reference File

EXECUTIVE TYPE

All Executives with names containing the E22-prefix are used in conjunction with the processing of the weekly instructor time cards.

Executive E22B is initiated via the following CSS Mode entry:

```
e22b (CR)
```

Once invoked, this Executive will run to completion without further action on the part of the User.

Executive E22B constructs a reference file which reflects the current contents of the Instructor data base. This file is filename = SPIN, filetype = DATA; the contents of this file are: instructor ID, school, and course CDP number. One record will exist for each course assigned to each instructor.

Since the Instructor file is internally maintained in sorted order by instructor ID (primary) and course CDP (secondary), the output file SPIN/DATA is also sorted into this sequence.

Once the SPIN/DATA file has been constructed, it need not be remade unless the Instructor data base is updated by changing one or more of the fields concerned (instructor ID, school, or assigned course CDP). Conversely, if the Instructor data base is so modified, a rerun of Executive E22B will be required prior to the processing of a new weekly batch of instructor time cards.

EXECUTIVE: E22C

FILE: Instructor Master

FUNCTION: Validate Contents of Instructor Weekly Time Cards

EXECUTIVE TYPE

All Executives with names containing an E-22 prefix are used in conjunction with the processing of weekly instructor time cards.

Executive E22C makes a comparison between the following two input files:

Filename	Filetype	Contents
E22	SORT	Instructor time cards for one week; sorted as a result of running Executive E22A successfully
SPIN	DATA	The sorted file produced by Executive E22B; these data reflect the current assignments of courses to instructors in the Instructor Master data base

A comparison is made of the data found on the time cards versus those which actually exist in the current Instructor data base. It is vital to assure that the time cards which represent the charge of instructor time to a specific course are in accordance with the data of the data base. A run of Executive E22C will diagnose errors which fall into the following three general areas:

(1) When the instructor ID found on a time card cannot be found in the data base, this error will be noted.

(2) Having found the instructor ID in the data base, an error will be noted if the school found in the data base differs from the school entered on the time card.

(3) A course CDP number is linked to a specific instructor on a time card; the data base must reflect assignment of the same course to that instructor. Any discrepancies will be noted.

Executive E22C is initiated by the following CSS Mode entry:

```
e22c  (CR)
```

Three (3) output files are produced by Executive E22C; they are:

Output Filename	Filetype	Content/Meaning
E22	DATA	Contains time-card images of those cards found to be error-free; if all time cards contain errors, this file will be empty
E22	BUST	Contains those time-card images found to be in error; if no errors are found, E22/BUST will be empty
E22	EMSG	If any errors are detected, this file will contain error messages indicating the exact nature of the error(s); an error-free run of Executive E22C will force this file to the empty state

Any error messages within the file E22/EMSG may be output at the User terminal via the following general NCSS PRINTF command:

```
print e22 emsg   (CR)
```

EXECUTIVE: E22D

FILE: Instructor Master

FUNCTION: Zero the Current
Week Time Fields

EXECUTIVE TYPE

All Executives with names containing an E22-prefix are used in conjunction with the processing of weekly instructor time cards.

This Executive clears (to zero) all of the time entries within the current week data field (CW) for all instructors. Once cleared, any instructor times entered to the data base (via Executive E22E) will be obvious by the appearance of non-zero CW data fields.

Executive E22D is invoked via the following CSS Mode entry:

```
e22d  (CR)
```

Once initiated, this Executive will run to completion without further action on the part of the User.

EXECUTIVE: E22E

FILE: Instructor Master

FUNCTION: Load the Current Week's Instructor Time Cards into the Instructor Data Base

EXECUTIVE TYPE

All Executives with names containing and E22-prefix are used in conjunction with the processing of weekly instructor time cards.

Input to this Executive is from the correct time-card file (filename = E22, filetype = DATA).

This Executive is initiated via the CSS Mode entry:

```
e22e    (CR)
```

Once initiated, Executive E22E will prompt the User for entry of the date to be associated with the batch of weekly time cards being processed. The date to be provided is entered in the following format:

```
yymmdd    e.g.,    750922    /where/    yy = two digit year
                                        mm = two digit month
                                        dd = two digit day
```

EXECUTIVE: E22F

FILE: Instructor Master

FUNCTION: Clear All Quarter-to-Date (QTD) Time Field Entries

EXECUTIVE TYPE

All Executives with names containing an E22-prefix are used in conjunction with the processing of weekly instructor time cards.

This Executive serves to clear (to zero) all accumulated quarter-to-date (QTD) time fields within the Instructor data base. The QTD fields must be cleared after the normal quarterly reports have been assembled.

Use of Executive E22F is initiated via the following CSS Mode entry:

```
e22f   (CR)
```

Once initiated, this Executive will run to completion without further action on the part of the User.

EXECUTIVE: E22G

FILE: Instructor Master

FUNCTION: Clear (Zero) All
Year-to-Date (YTD)
Time Field Entries
for All Instructors

EXECUTIVE TYPE

All Executives with names containing an E22-prefix are used in conjunction with the processing of weekly instructor time cards.

After processing any desired quarterly and yearly reports from the Instructor data base, Executive E22G can be used to clear (to zero) all accumulated yearly times.

This Executive is invoked via the following CSS Mode entry:

```
e22g  (CR)
```

Once initiated, this Executive will run to completion without further input from the User.

EXECUTIVE: E22R1

FILE: Instructor Master

FUNCTION: Standard Report
Executive

EXECUTIVE TYPE

The report produced by this Executive is shown in the sample run, below. The original intent of this report was to assist in tracking down instructor time card errors.

The report is initiated by the following CSS Mode entry:

```
e22r1 (CR)
```

Upon invocation, the Executive will prompt the User for the desired instructor ID number(s). One must be provided; up to four (4) may be entered at a time, separated by the symbol 'OR'. For instance, all of the following are legal replies to the instructor ID prompt:

```
123456789

133333333 OR 244444444

333333331 OR 444444442 OR 123443218

575757575 OR 566666667 OR 123456797 OR 345345345
```

EXECUTIVE E22R1 SAMPLE RUN

```
14.17.28 E22R1
* ENTER OUT TO ABORT
*
* ENTER INSTRUCTOR ID (ID), A9
123456789
±!

   NUMBER OF RECORDS IN TABLE=      2   LINES=    2

PAGE 1

GENERAL QUERY OF INSTRUCTOR ASSIGNMENTS
AGAINST FOLLOWING INSTRUCTOR ID(S):
123456789
SCH    ID         IN  NME              CDP
---    --         --  ---              ---
NAV    123456789  XJ  FARQUART         9342
                                       97X7
```

EXECUTIVE: E22R2

FILE: Instructor Master

FUNCTION: Standard Report
Executive

EXECUTIVE TYPE

The report produced by this Executive is shown in the sample run, below. This report provides personnel responsible for instructor time card processing with a list of the assignments of all of the instructors in the data base.

This report is initiated via the following CSS Mode entry:

```
e22r2 (CR)
```

Upon invocation, the Executive will run to completion without further action on the part of the User.

The sample run below illustrates only a few lines of the total report. The line count of the sample indicates a report that will require ten or more pages of printed output. It is assumed that a report of this length will be required infrequently.

SAMPLE TERMINAL RUN OF EXECUTIVE E22R2

```
10.20.14 E22R2
±!!!

EXTERNAL STORAGE 8

NUMBER OF RECORDS IN TABLE=    642    LINES=    642

PAGE 1

     GENERAL-PURPOSE INSTRUCTOR ASSIGNMENT
     LISTING FOR TIME-CARD VALIDATION...

SCH    ID              NME            CDP
---    --              ---            ---

AC&R   000000000       ALPHA          1234

       111111111       BETA           4321
                       BETA           5556

       333333333       CHARLIE        1222

       454545454       HOTEL          2345
                                      7890

       ... Etc. for remainder of report

       ... Each school starts a top-of-page
```

EXECUTIVE: E22R3

FILE: Instructor Master

FUNCTION: Standard Report
Executive

EXECUTIVE TYPE

The sample run, below, indicates the type of report produced by this Executive. This report provides a weekly total of all times reported by all instructors of a selected school.

Since this report sums the current week (CW) field of the Instructor data base for each instructor, it is important that Executive E22D be run prior to entering time card information to the file each week. If the CW fields are not zeroed prior to entry of new data, the fields will reflect data entered in previous week(s). As indicated in the report sample, this will result in totals exceeding 40.0 hours in some instances. It will be impossible in these cases to discern between times expended during the current week and times logged during previous week(s) without resort to prior weeks' reports.

This report is initiated via the following CSS Mode entry:

```
e22R3   (CR)
```

Upon invocation, this Executive will prompt the User for the school selection. This is indicated in the sample run.

SAMPLE TERMINAL RUN OF EXECUTIVE E22R3

```
10.07.20 E22R3
*
* ENTER OUT TO ABORT
*
* ENTER SCHOOL CODE (SCH), A4
NAV
±!!

    NUMBER OF RECORDS IN TABLE   644  LINES =      19

PAGE 1

WEEKLY INSTRUCTOR TIME SUMMARY FOR
TIME-CARD VALIDATION...
                                           EXPENDED
SCHOOL  ID          IN   NAME              TIME
------  --          --   ----              --------
NAV     000000001   XQ   ALPHA                   .0
        100000000   DD   BETA                  76.0
        000100000   MM   CHARLIE               80.0
        110001011   XR   DELTA                 34.3
        121212121   BB   ECHO                    .0
```

EXECUTIVE: E22R4
FILE: Instructor Master
FUNCTION: Standard Report Executive

EXECUTIVE TYPE

The report produced by Executive E22R4 is indicated in the sample run, below. This report provides a weekly summary by course and time type of all times expended by a single selected instructor.

Since this report deals with the current week (CW) field of the Instructor data base, it is important that Executive E22D be run prior to entering new time card information to the file each week. If the CW fields are not zeroed prior to entry of new time data, the fields will reflect data entered this week and during previous weeks. When totaled, such summations will frequently exceed 40.0 hours. It will be impossible in these cases to discern between times expended during the current week and time logged during previous weeks without resort to prior weeks' reports.

This report is initiated by the following CSS Mode entry:

```
e22r4  (CR)
```

Upon invocation, this Executive will prompt the User for the desired instructor ID Number (ID). This is indicated in the sample, below.

EXECUTIVE E22R4 SAMPLE TERMINAL RUN

```
10.10.04 E22R4
* ENTER OUT TO ABORT
*
* ENTER INSTRUCTOR ID (ID), A9
101010101
±!

   NUMBER OF RECORDS IN TABLE=    9 LINES=     9

PAGE 1

WEEKLY INSTRUCTOR INDIVIDUAL TIME
DISTRIBUTION AMONG COURSES...
                                                  TIME   EXPENDED
SCHOOL   ID          IN  NAME             CDP     TYPE   TIME
------   --          --  ----             ---     ----   --------
COMM     101010101   XX  XERXES           9317    A1          8.3
                                                  A2          5.8
                                                  A5         25.9
                                          9318    A1          7.2
                                                  A2          6.8
                                                  A5         23.0
                                                  A6          4.0
                                                  B2          4.0
                                                  B6          7.6
*TOTAL ID 101010101                                          92.6
*TOTAL SCH COMM                                              92.6

TOTAL                                                        92.6
```

EXECUTIVE: R5

FILE: Instructor Master

FUNCTION: Standard Report
Executive

EXECUTIVE TYPE

The type of report produced by this Executive is indicated in the sample run, below. The report depicts the number of instructors in each of the FTC schools that will be scheduled for rotation during the period of six months from the time of the report.

This report is initiated by making the following CSS Mode entry:

```
r5     (CR)
```

Once started, this Executive will run to completion without further action by the User.

SAMPLE TERMINAL RUN OF EXECUTIVE R5

```
09.58.47 R5
±!!

 NUMBER OF RECORDS IN TABLE=    41 LINES=    25

PAGE    1

*** DATE THIS REPORT : 09/11/75 ***
SCHOOL  PRD    COUNT
------  ---    -----

AC&R     10/75      1
         11/75      1

*TOTAL AC&R         2

ASW      11/75      1

*TOTAL ASW          1

    ... For other Schools

SPLY     11/75      1

*TOTAL SPLY         1

TTM      12/75      2

*TOTAL TTM          2

TOTAL              41
```

EXECUTIVE: R6

FILE: Instructor Master

FUNCTION: Standard Report
Executive

EXECUTIVE TYPE

An illustration of the type of report furnished by this Executive is shown in the sample run, below.

This report shows, by name and instructor ID, the instructors that will be scheduled for rotation within six months from the time of the report. The function is similar to that of Executive R5, however, more detail is presented in the Executive R6 report.

This Executive is initiated by the following CSS Mode entry:

```
r6      (CR)
```

Once invoked, this Executive will run to completion without further action on the part of the User.

SAMPLE TERMINAL RUN OF EXECUTIVE R6

```
10.03.50 R6
±!!

  NUMBER OF RECORDS IN TABLE=    41 LINES=    41

PAGE    1

*** DATE THIS REPORT : 09/11/75 ***
SCHOOL  PRD    LIST    SSN        NAME         IN
------  ---    ----    ---        ----         --

AC&R    10/75     1    123456789  ALPHA        XX
        11/75     2    987654321  BETA         YY

ASW     11/75     1    987698769  DELTA        AA

  ... Etc, following the same format

SPLY    11/75     1    999999999  GAMMA        GG

TTM     12/75     1    888888888  CHARLIE      CC
                  2    777777777  CHARLES      CX
```

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E40 is invoked by the following CSS Mode entry:

```
e40   (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                               CSS Mode Time Prompt
14.55.01   e40   (CR)

* FUNCTION - ADD A NEW SCHOOL, AND/OR COURSE
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  (CR)
```

Use of this entry implies that Executive E40 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E40 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course File is depicted in the diagram below. Upon entry to the NEW mode, Executive E40 will issue terminal prompt messages for the Course File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

Data Fields Prompted by Executive E40

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric	
			Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
	Course Delete Flag (DEL), A1 1 = Course Active 2 = Course Deleted	1		
	Course Catalog Number (CTLG), A4	Blank		
	Course Title (CRS), A16	Blank		
	Covenings Number 1 (CONV1), I3	0	0	
	Course Length #1 (LEN1), F4.1	0	0	
	Capacity #1 (CAP1), I3	0	0	

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

Data Fields Prompted by Executive E40 (continued)

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
	BUPERS Capacity #1 (BCAP1), I3	0	0	
	Demand #1 (DMD1), I5	0	0	
	BUPERS Demand #1 (BDMD1), I5	0	0	
	Schedule Offset (OFST), I2	0	0	
	Failure Rate (PFAIL), F5.3	0	0	
	NONAC Disenrollment (NADIS), F5.3	0	0	
	No-Show Percent (NOSHOW), F5.3	0	0	
	Percent Setbacks (SETB), F5.3	0	0	
	Number Backlogs (BKLG), I4	0	0	
	Course J-Number (JNO), A4	Blank		
	Convenings #2 (CONV2), I3	0	0	
	Length #2 (LEN2), F4.1	0	0	
	Capacity #2 (CAP2), I3	0	0	
	BUPERS Capacity #2 (BCAP2), I3	0	0	
	Demand #2 (DMD2), I5	0	0	
	BUPERS Demand #2 (BDMD2), I5	0	0	
	Change Week #2 (CHWK2), I3	0	0	
	Convenings #3 (CONV3), I3	0	0	
	Length #3 (LEN3), F4.1	0	0	

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

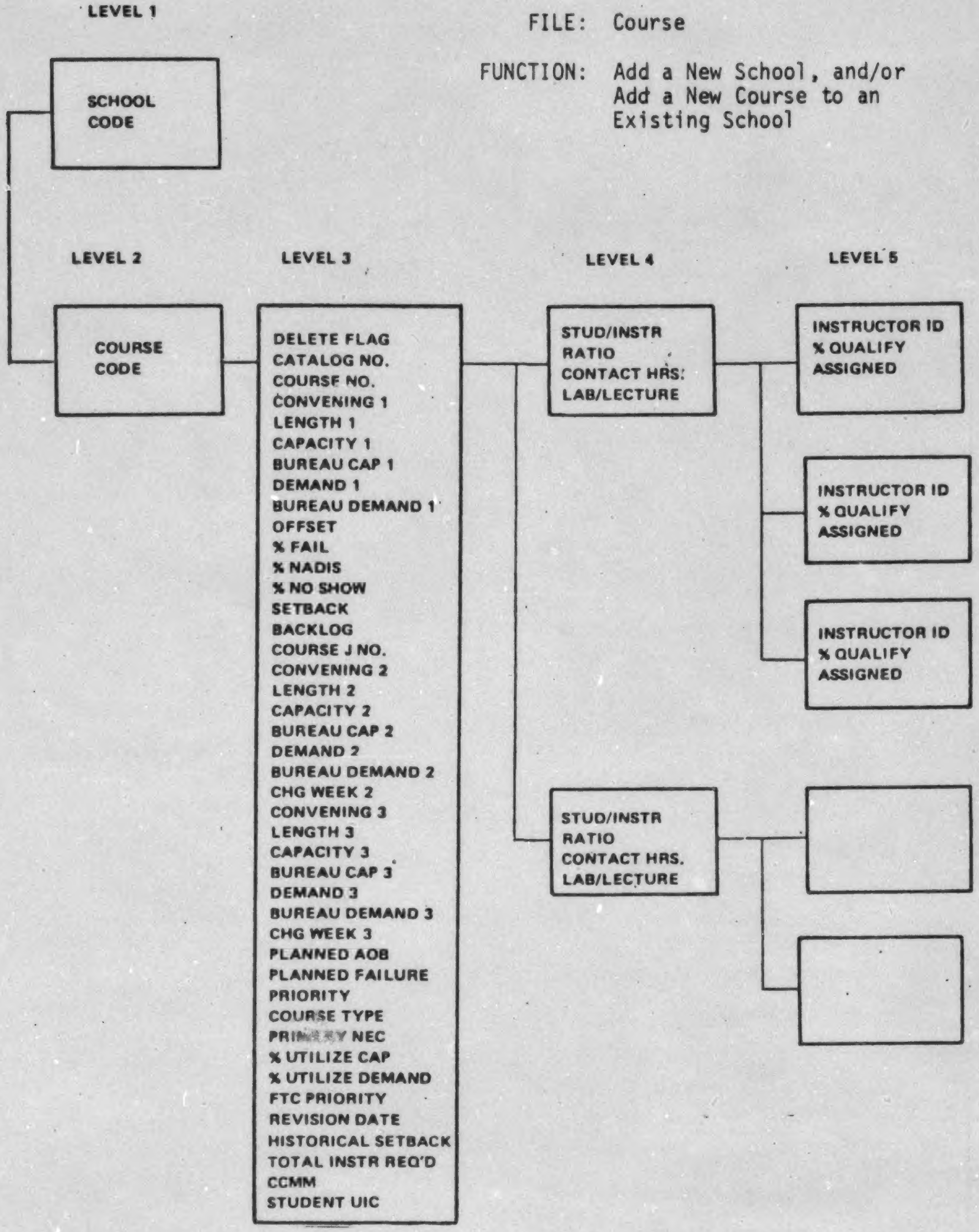
Data Fields Prompted by Executive E40 (continued)

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
	Capacity #3 (CAP3), I3	0	0	
	BUPERS Capacity #3 (BCAP3), I3	0	0	
	Course Demand #3 (DMD3), I5	0	0	
	BUPERS Demand #3 (BDMD3), I5	0	0	
	Change Week #3 (CHWK3), I3	0	0	
	Planned AOB (PAOB), I4	0	0	
	Academic Failures (AFAIL), F5.3	0	0	
	Course Priority (PRTY), I2	0	0	
	Course Type (CTYPE), A2	Blank		
	Primary NEC (PNEC), A4	Blank		
	% Capacity Utilized (UCAP), I3	0	0	
	% Demand Utilized (UDEM), I3	0	0	
	FTC Priority (FPRTY), I2	0	0	
	Revisions Date (RDTE), I6	0	0	
	Historical Setback (HSETB), F5.3	0	0	
	Total Instructors Required (TINSTR), F4.1	0	0	
	Student UIC (SUIC), A5	Blank		
	Course CCMM (CCMM), A10	Blank		

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS: LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E40

FILE: Course

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

SAMPLE TERMINAL RUN OF EXECUTIVE E40

```
10.25.24 E40
* FUNCTION - ADD A NEW SCHOOL,
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_SCHX
*
* ENTER COURSE CDP (CDP), A4
_CRSY
*
* ENTER DELETE FLAG (DEL), A1
*    1 = COURSE ACTIVE
*    2 = COURSE HAS BEEN DELETED
_DONE
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
      NUMBER OF RECORDS UPDATED=       0  INCLUDED=        1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E40 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E41

FILE: Course

FUNCTION: Add a Student/Instructor
Ratio and an Instructor
to an Existing Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E41 is invoked by the following CSS Mode entry:

```
e41    (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                                  CSS Mode Time Prompt
14.55.01    e41    (CR)
* FUNCTION - ADD A STUDENT/INSTR RATIO AND AN
     INSTRUCTOR TO AN EXISTING COURSE...
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out   (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change   (CR)
```

Use of this entry implies that Executive E41 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E41 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new   (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E41

FILE: Course

FUNCTION: Add a Student/Instructor
Ratio and an Instructor
to an Existing Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course File is depicted in the diagram below. Upon entry to the NEW mode, Executive E41 will issue terminal prompt messages for the Course File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

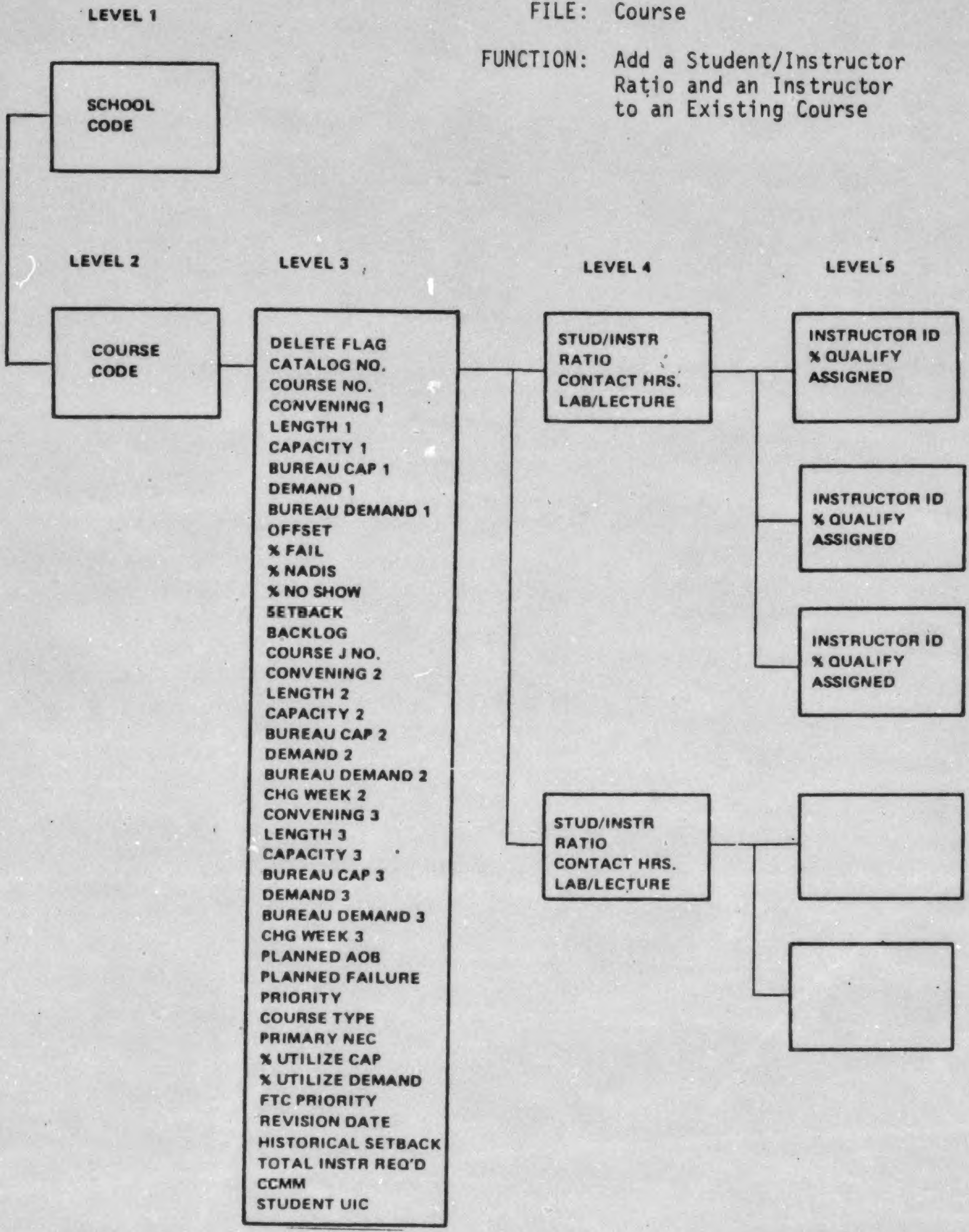
Data Fields Prompted by Executive E41

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1			
	Instr Contact Hours (CHRS), F5.1	0	0	
*	Course Type (CTYP), A1			
*	Instructor ID (ID), A9			
	Instr Qualify (QUAL), A3			
*	Instr Assign Flag (ASN), A1			

EXECUTIVE: E41

FILE: Course

FUNCTION: Add a Student/Instructor Ratio and an Instructor to an Existing Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
LEVEL 5
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED

DOTS COURSE FILE — HIEARCHTIC STRUCTURE

EXECUTIVE: E41

FILE: Course

FUNCTION: Add a Student/Instructor
Ratio and an Instructor
to an Existing Course

SAMPLE TERMINAL RUN OF EXECUTIVE E41

```
10.27.41 E41
* FUNCTION - ADD A STUDENT/INSTR RATIO
*              AND AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_SCHX
*
* ENTER COURSE CDP (CDP), A4
_CRSY
*
* ENTER STUDENT/INSTR RATIO (SIR), F4.1
_15
*
* ENTER INSTR CONTACT HRS (CHRS), F5.1
_DONE
* CANNOT OMIT FIELD CALLED CTYP
*
* ENTER COURSE TYPE (CTYP), A1
_2
*
* ENTER INSTRUCTOR ID (ID), A9
_222222222
*
* ENTER INSTR % QUALIFIED (QUAL), A3
_40
*
* ENTER ASSIGNED FLAG (ASN), I1
_1
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
      NUMBER OF RECORDS UPDATED=        0   INCLUDED=         1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E41 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E42

FILE: Course

FUNCTION: Add a New Instructor to an Existing Student/ Instructor Ratio and Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E42 is invoked by the following CSS Mode entry:

```
e42   CR
```

Upon invocation, the Executive will produce the following entry text:

```
                               CSS Mode Time Prompt
14.55.01    e42    CR
*
* FUNCTION - ADD A NEW INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  CR
```

Use of this entry implies that Executive E42 Has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E42 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

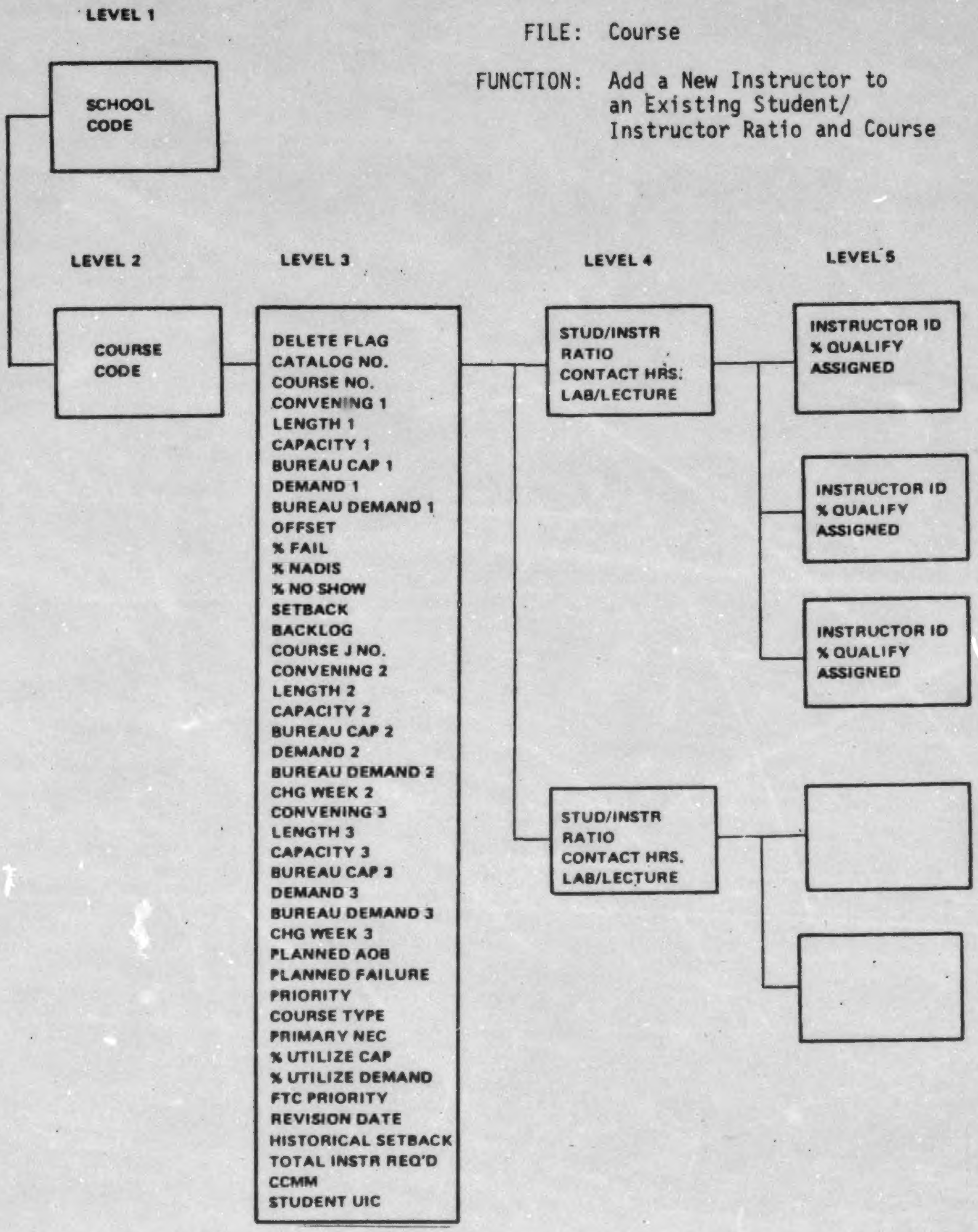
```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E42

FILE: Course

FUNCTION: Add a New Instructor to an Existing Student/Instructor Ratio and Course


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E42

FILE: Course

FUNCTION: Add a New Instructor
to an Existing Student/
Instructor Ratio and Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course File is depicted in the diagram below. Upon entry to the NEW mode, Executive E42 will issue terminal prompt messages for the Course File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none CR /or/ no CR /or/ n CR

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done CR

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

Data Fields Prompted by Executive E42

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric	
			Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1			
*	Instructor ID (ID), A9			
	Instr Qualify (QUAL), A3	Blank		
*	Instr Assign Flag (ASN), A1			

EXECUTIVE: E42

FILE: Course

FUNCTION: Add a New Instructor to
an Existing Student/
Instructor Ratio and Course

SAMPLE TERMINAL RUN OF EXECUTIVE E42

```
10.31.10 E42
:: FUNCTION - ADD A NEW INSTRUCTOR
:: SPECIFY EITHER NEW OR CHANGE ::
_NEW
::
:: ENTER SCHOOL CODE (SCH), A4
_SCHX
::
:: ENTER COURSE CDP (CDP), A4
_CRSY
::
:: ENTER STUDENT/INSTR RATIO (SIR), F4.1
_15
:: ENTER INSTRUCTOR ID (ID), A9
_333333333
::
:: ENTER INSTR % QUALIFIED (OUAL), A3
_100
::
:: ENTER ASSIGNED FLAG (ASN), I1
 1
:: TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
       NUMBER OF RECORDS UPDATED=        0  INCLUDED=         1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attemoted using the transaction produced by the Executive E42 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

For an example of a terminal run of Executive E42 that resulted in RAMIS rejection of the data maintenance transaction, see the documentation for Executive W42. Executive W42 performs the same data maintenance activities as Executive E42 - W42 addresses the Course Scratch Data Base.

EXECUTIVE: E61

FILE: Course

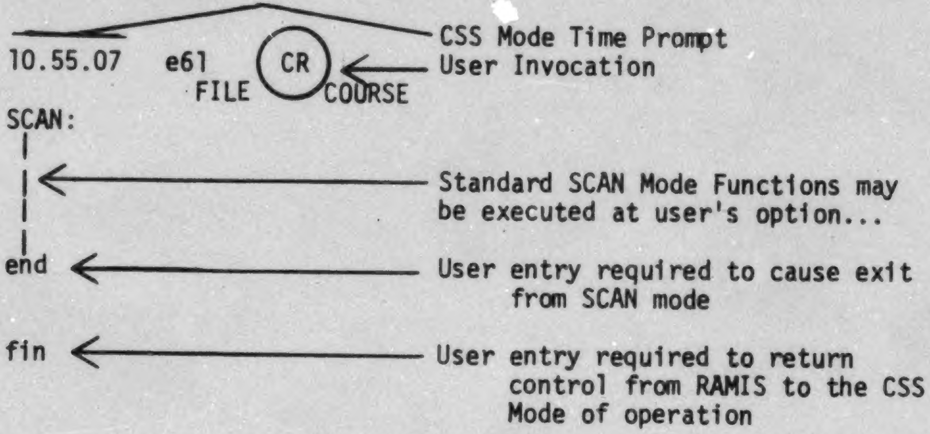
FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive E61 is invoked via the following technique:

```
e61   CR
```

Executive response to invocation will assume the following pattern:



```
10.55.07   e61   CR
             FILE   COURSE
SCAN:
|
|
|
end
fin
```

CSS Mode Time Prompt

User Invocation

Standard SCAN Mode Functions may be executed at user's option...

User entry required to cause exit from SCAN mode

User entry required to return control from RAMIS to the CSS Mode of operation

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

For the Course data base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	SCH	1	A	4
2	CDP	2	A	4
3	DEL	3	A	1
	CTLG	4	A	10
	CRS	5	A	16
	CONV1	6	I	3
	LEN1	7	F	4.1

(Continued)

EXECUTIVE: E61

FILE: Course

FUNCTION: Change an Existing Field

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
	CAP1	8	I	3
	BCAP1	9	I	3
	DMD1	10	I	5
	BDMD1	11	I	5
	OFST	12	I	2
	PFAIL	13	F	5.3
	NADIS	14	F	5.3
	NOSHOW	15	F	5.3
	SETB	16	F	5.3
	BKLG	17	I	4
	JNO	18	A	4
	CONV2	19	I	3
	LEN2	20	F	4.1
	CAP2	21	I	3
	BCAP2	22	I	3
	DMD2	23	I	5
	BDMD2	24	I	5
	CHWK2	25	I	3
	CONV3	26	I	3
	LEN3	27	F	4.1
	CAP3	28	I	3
	BCAP3	29	I	3
	DMD3	30	I	5
	BDMD3	31	I	5
	CHWK3	32	I	3
	PAOB	33	I	4
	AFAIL	34	F	5.3
	PRTY	35	I	2
	CTYPE	36	A	2
	PNEC	37	A	4
	UCAP	38	I	3
	UDEM	39	I	3
	FPRTY	40	I	2
	RDTE	41	I	6
	HSETB	42	F	5.3
	TINSTR	43	F	4.1
	SUIC	44	A	5
	CCMM	45	A	10

(Continued)

EXECUTIVE: E61

FILE: Course

FUNCTION: Change an Existing Field

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
4	SIR	46	F	4.1
	CHRS	47	F	5.1
	CTYP	48	A	1
5	ID	49	A	9
	QUAL	50	A	3
	ASN	51	I	1
6	NME	52	A	16

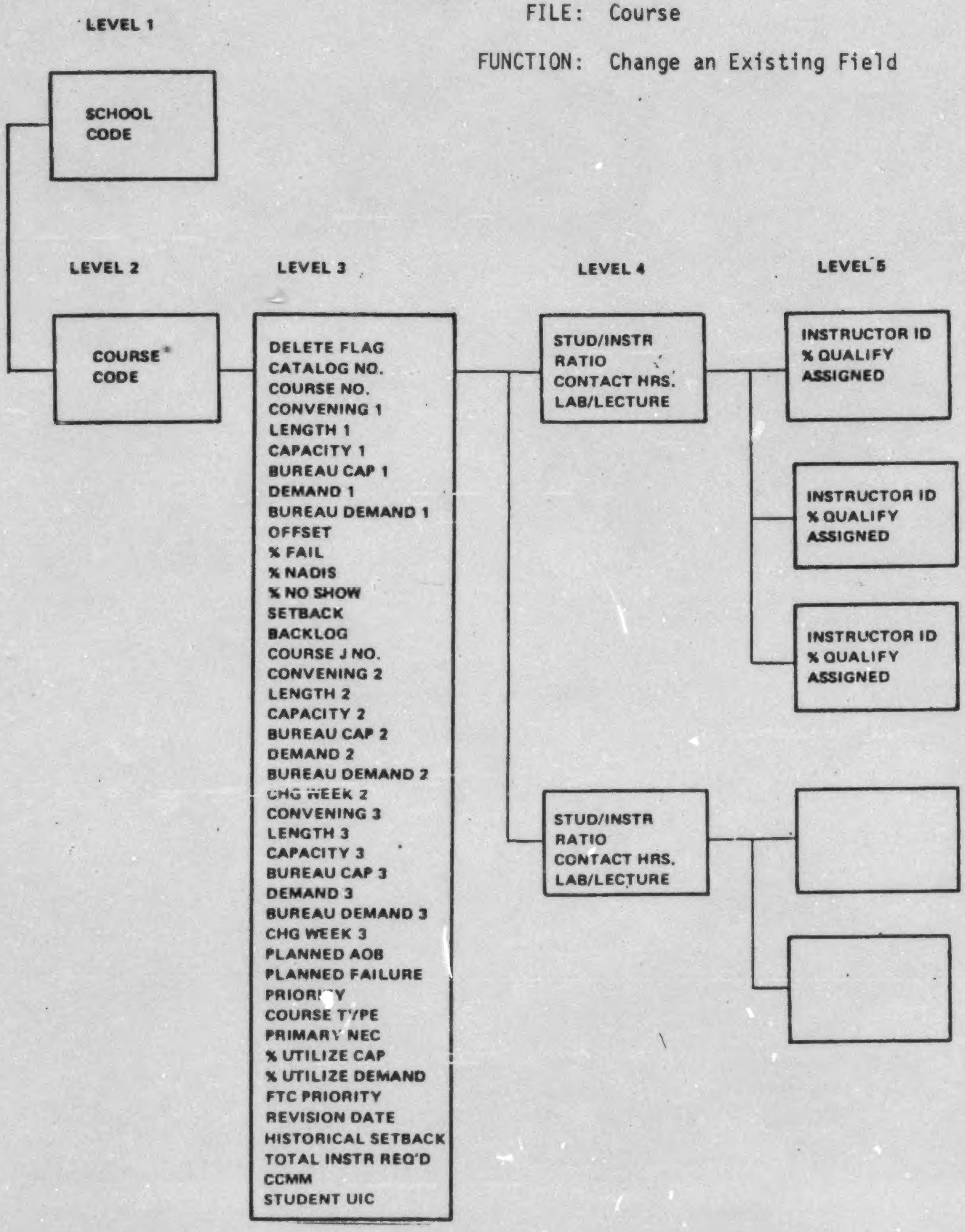
SAMPLE TERMINAL RUN OF EXECUTIVE E61

```
10.42.50 E61
±I          FILE    COURSE
SCAN:
SHOW *
  01 SCH  02 CDP  03 DEL  04 CTLG 05 CRS  06 CONV1    07 LEN1 08 CAP1 09 BCAP1
  10 DMD1 11 BDMD1    12 OFST 13 PFAIL
  14 NADIS    15 NOSHOW   16 SETB 17 BKLG 18 JNO  19 CONV2    20 LEN2 21 CAP2 22
 BCAP2    23 DMD2 24 BDMD2    25 CHWX2
  26 CONV3    27 LEN3 28 CAP3 29 BCAP3    30 DMD3 31 BDMD3    32 CHWK3    33 PAO
B 34 AFAIL    35 PRTY 36 CTYPE    37 PNEC
  38 UCAP 39 UDEM 40 FPRTY    41 RDTE 42 HSETB    43 TINSTR   44 SUIC 45 CCMM 46
 SIR  47 CHRS 48 CTYP 49 ID   50 QUAL 51
 ASN  52 NME
T
SHOW 1,2,49
  01 SCH  02 CDP  49 ID
L 1=SCHX,2=CRX@SY,49=555555555
 01=SCHX 02=CRSY 49=555555555
C 49=±444444444
 01=SCHX 02=CRSY 49=444444444
END
±FIN
```

EXECUTIVE: E61

FILE: Course

FUNCTION: Change an Existing Field


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E62

FILE: Course

FUNCTION: Delete an Entire School

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E62 is invoked by the following CSS-Mode entry:

```
e62    (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (E62), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out    (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive E62

Mandatory Field (*)	Field Name (Mnemonic), Data Type
*	School Code (SCH), A4.

SAMPLE TERMINAL RUN OF EXECUTIVE E62

```
11.57.56 E62
* FUNCTION - DELETE AN ENTIRE SCHOOL
* ENTER SCHOOL CODE (SCH), A4
SCHX
          RECORDS DELETED=       0 SEGMENTS DELETED=        1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E62 run.

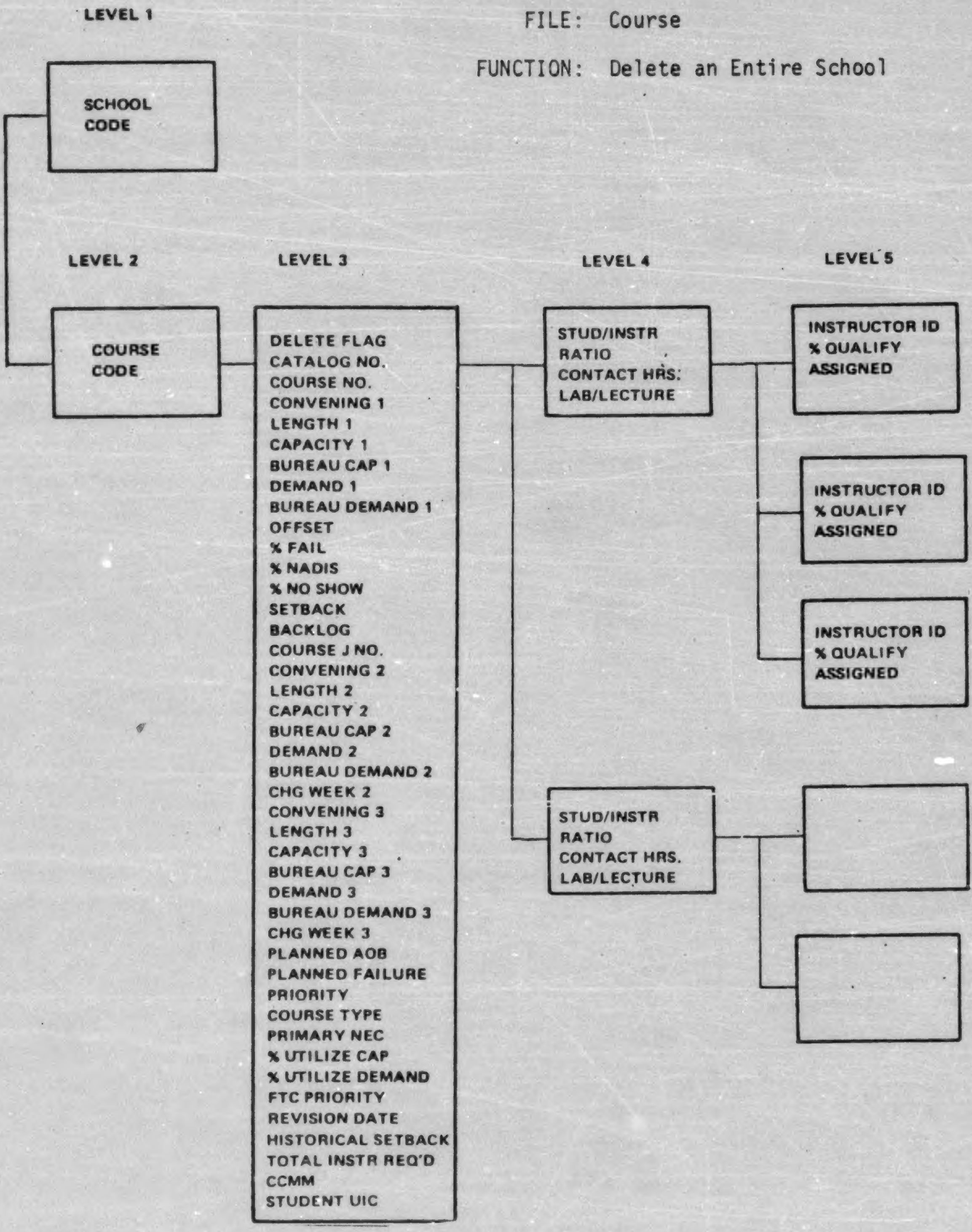
If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E62

FILE: Course

FUNCTION: Delete an Entire School


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
LEVEL 5
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E63

FILE: Course

FUNCTION: Delete A Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E63 is invoked by the following CSS-Mode entry:

e63 (CR)

Upon invocation, the Executive will produce entry text identifying the Executive number (E63), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

out (CR)

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive E63

Field Name (Mnemonic), Data Type

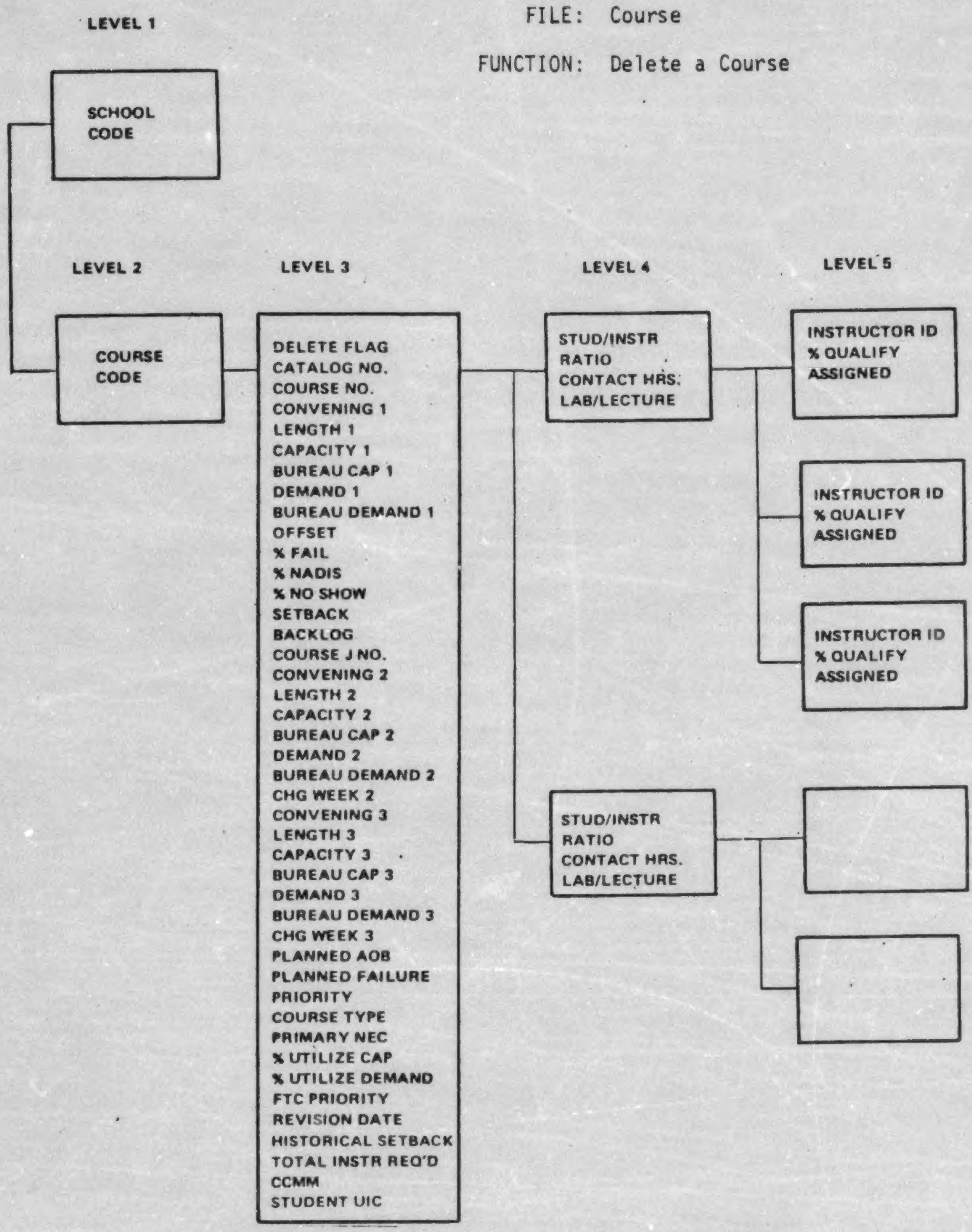
School Code (SCH), A4

Course CDP Number (CDP), A4

EXECUTIVE: E63

FILE: Course

FUNCTION: Delete a Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
LEVEL 5
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E63

FILE: Course

FUNCTION: Delete a Course

SAMPLE TERMINAL RUN OF EXECUTIVE E63

```
11.56.46 E63
* FUNCTION - DELETE A COURSE
*
* ENTER SCHOOL CODE (SCH), A4
SCHX
*
* ENTER COURSE CDP  (CDP), A4
CRSY
        RECORDS DELETED=       1SEGMENTS DELETED=       5
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E63 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E64

FILE: Course

FUNCTION: Delete an Instructor
From an Existing Student/
Instructor Ratio and Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive E64 is invoked by the following CSS Mode entry:

```
e64     (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                                 CSS Mode Time Prompt
14.55.01    e64    (CR)
*
* FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out   (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change   (CR)
```

Use of this entry implies that Executive E64 Has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive E64 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new   (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: E64

FILE: Course

FUNCTION: Delete an Instructor
From an Existing Student/
Instructor Ratio and Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DCTS Course File is depicted in the diagram below. Upon entry to the NEW mode, Executive E64 will issue terminal prompt messages for the Course File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

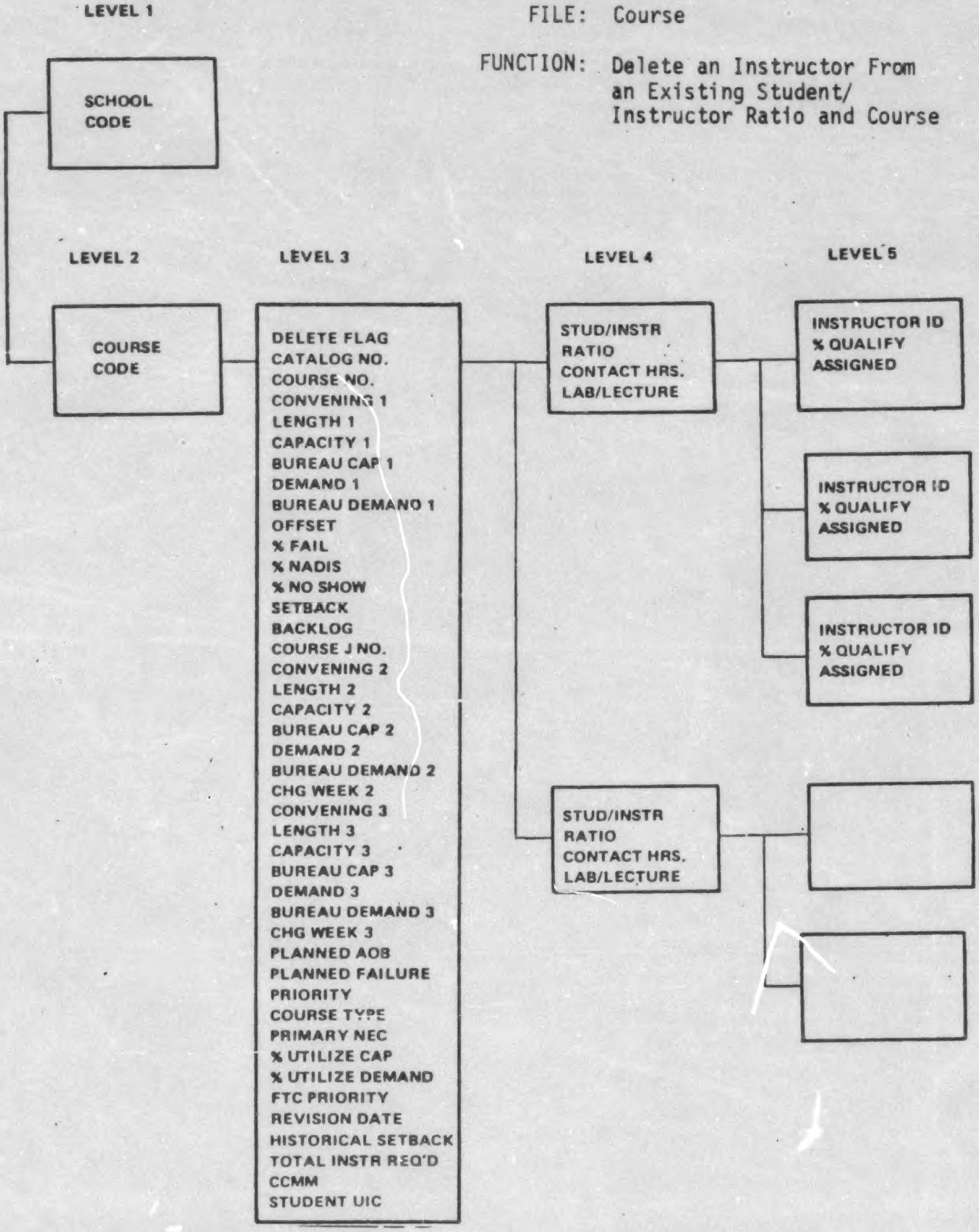
Data Fields Prompted by Executive E64

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1	0	0	
*	Instructor ID (ID), A9	Blank		

EXECUTIVE: E64

FILE: Course

FUNCTION: Delete an Instructor From an Existing Student/Instructor Ratio and Course


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E64

FILE: Course

FUNCTION: Delete an Instructor From
an Existing Student/
Instructor Ratio and Course

SAMPLE TERMINAL RUN OF EXECUTIVE E64

```
10.45.25 E64
∷ FUNCTION - DELETE AN INSTRUCTOR
∷ SPECIFY EITHER NEW OR CHANGE ∷
_NEW
∷
∷ ENTER SCHOOL CODE (SCH), A4
_SCHX
∷
∷ ENTER COURSE CDP (CDP), A4
_CRSY
∷
∷ ENTER STUDENT/INSTR RATIO (SIR), F4.1
_15
∷
∷ ENTER INSTRUCTOR ID (ID), A9
_444444444
∷
∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN

              RECORDS DELETED=      1SEGMENTS DELETED=      2
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E64 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E65

FILE: Course

FUNCTION: Delete a Student/
Instructor Ratio
From a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive E65 is invoked by the following CSS-Mode entry:

```
e65   (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (E65), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out   (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive E65

School Code (SCH), A4

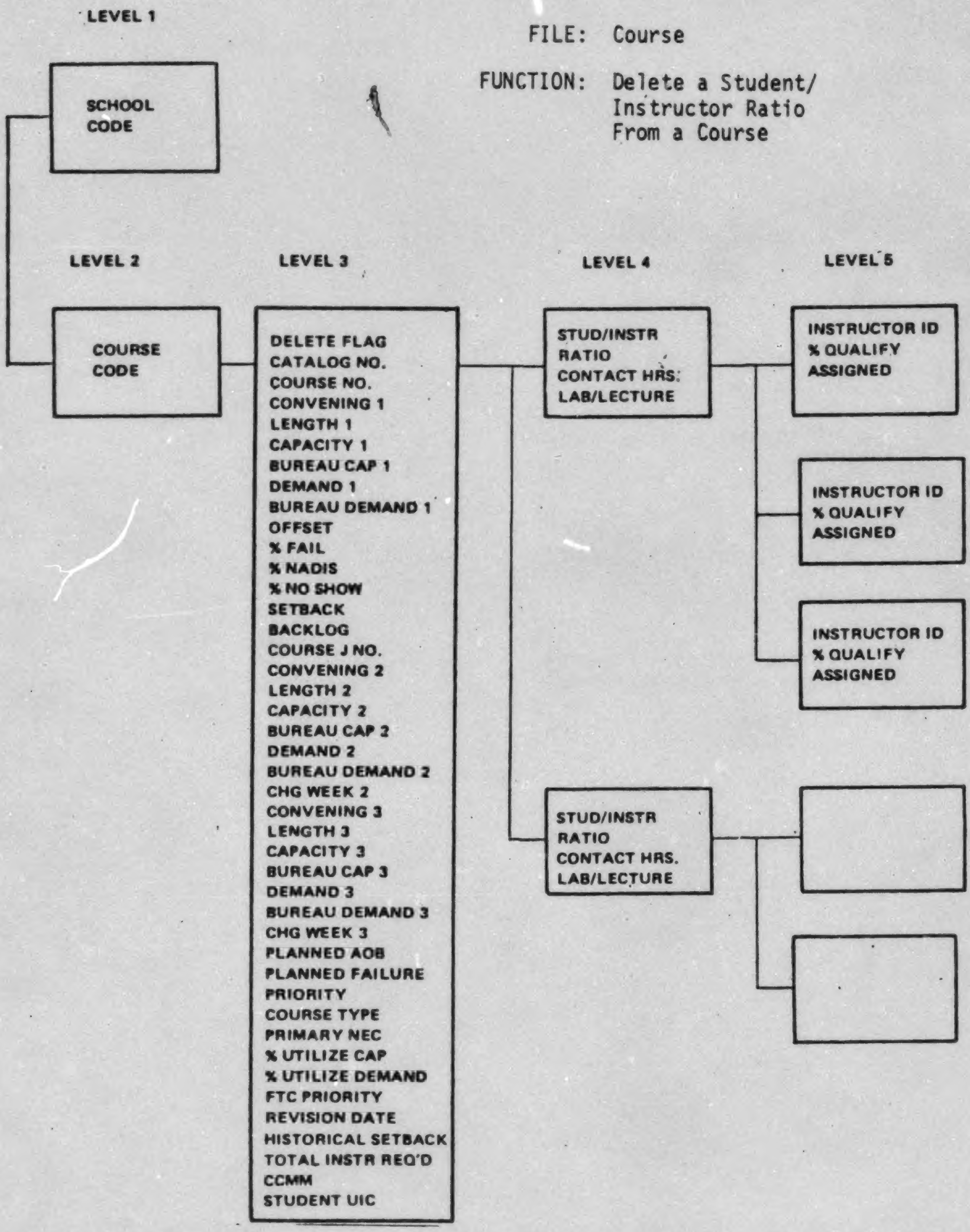
Course CDP Number (CDP), A4

Student/Instructor Ratio (SIR), F4.1

EXECUTIVE: E65

FILE: Course

FUNCTION: Delete a Student/
Instructor Ratio
From a Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO CONTACT HRS: LAB/LECTURE
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
LEVEL 5
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: E65

FILE: Course

FUNCTION: Delete a Student/
Instructor Ratio
From a Course

SAMPLE TERMINAL RUN OF EXECUTIVE E65

```
10.48.22 E65
:: FUNCTION - DELETE A STUDENT/INSTRUCTOR RATIO FROM A COURSE
::
:: ENTER SCHOOL CODE (SCH), A4
SCHX
::
:: ENTER COURSE CDP (CDP), A4
CRSY
::
:: ENTER STUDENT/INSTRUCTOR RATIO (SIR), F4.1
15
          RECORDS DELETED=      2SEGMENTS DELETED=      5
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive E65 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: E43

FILE: Course

FUNCTION: Load the Course Master
Data Base from Card Input

EXECUTIVE TYPE

The Course master data base is loaded from scratch by using the following Executive routines (in the sequence indicated):

Executive	Input Card Format	Input Data Content
E43	Course File, TYPE -1- and TYPE -2- Input Data Cards	Course Fixed Information
E44	Course File, TYPE -3- Input Data Card	Extension of Course Fixed Information
E34	Instructor File, TYPE -2- Input Data Card	Instructor Assignments to Courses

In a normal load operation, the sequence of load Executives indicated above should be maintained.

If no TYPE -3- input data cards are available, they may be omitted from the load sequence and Executive E44 run at the convenience of the user.

If Executives E43 and E33 are to be run, the order must be E43; then, E34. E43 must run <u>successfully</u>, if error-free operation of E34 is anticipated.

The format of the card input data sets associated with Executive E43 are illustrated in the diagrams below entitled "Course Data Base Type -1- and Type -2- Input Card Formats". The actual punched cards that make up these input data sets must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read in the NCSS computer system via a remote card reader.

Input to Executive E43 is named:

Filename = E43

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation, Executive E43 will indicate via an error message if the input data set E43 DATA is not present.

Executive E43 is invoked by the following terminal keyboard entry:

```
e43    (CR)
```

Once Executive E43 has successfully located its input data set and commenced load operations, no further action on the part of the user is required or requested.

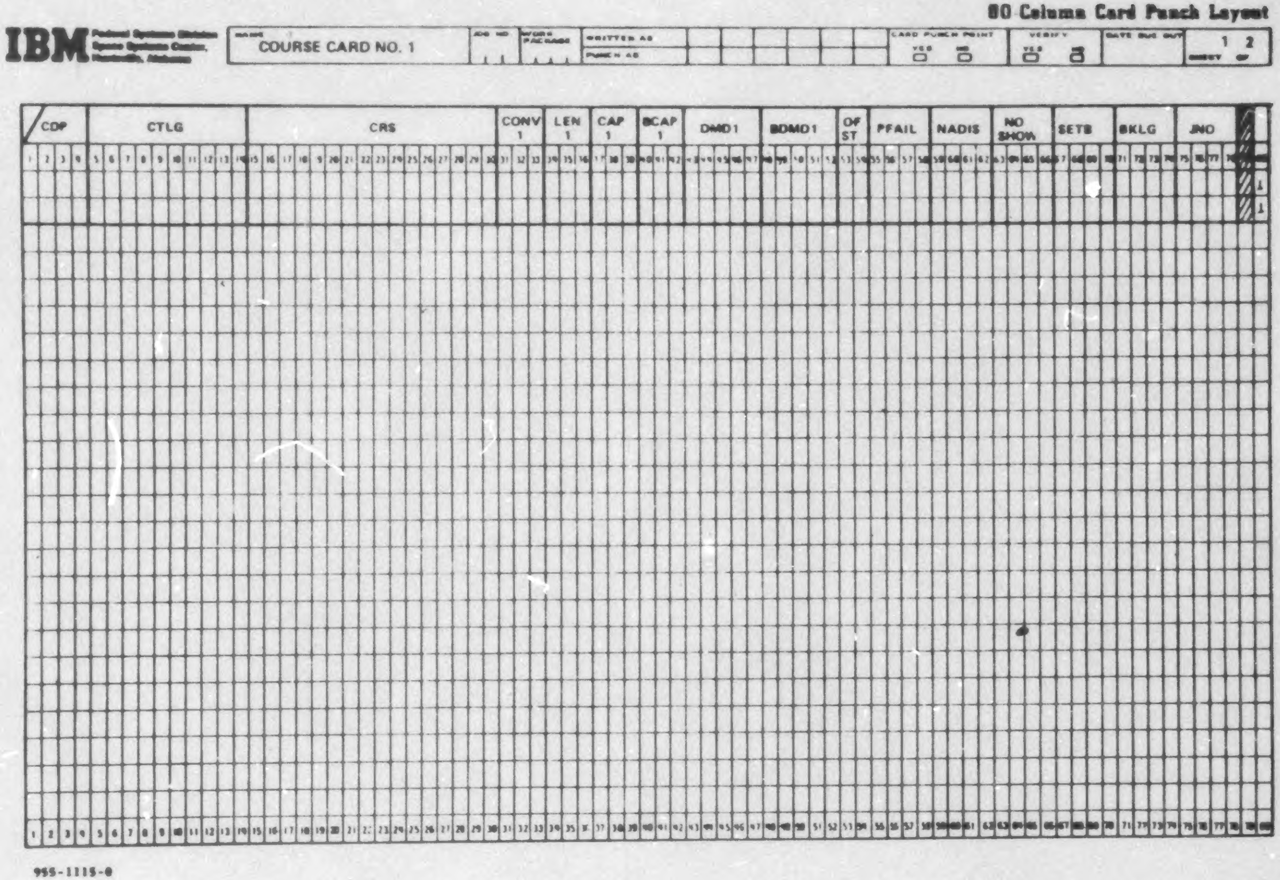
TAEG REPORT NO. 30

EXECUTIVE: E43

FILE: Course

FUNCTION: Load the Course Master
Data Base From Card Input

COURSE DATA BASE TYPE -1- INPUT CARD FORMAT

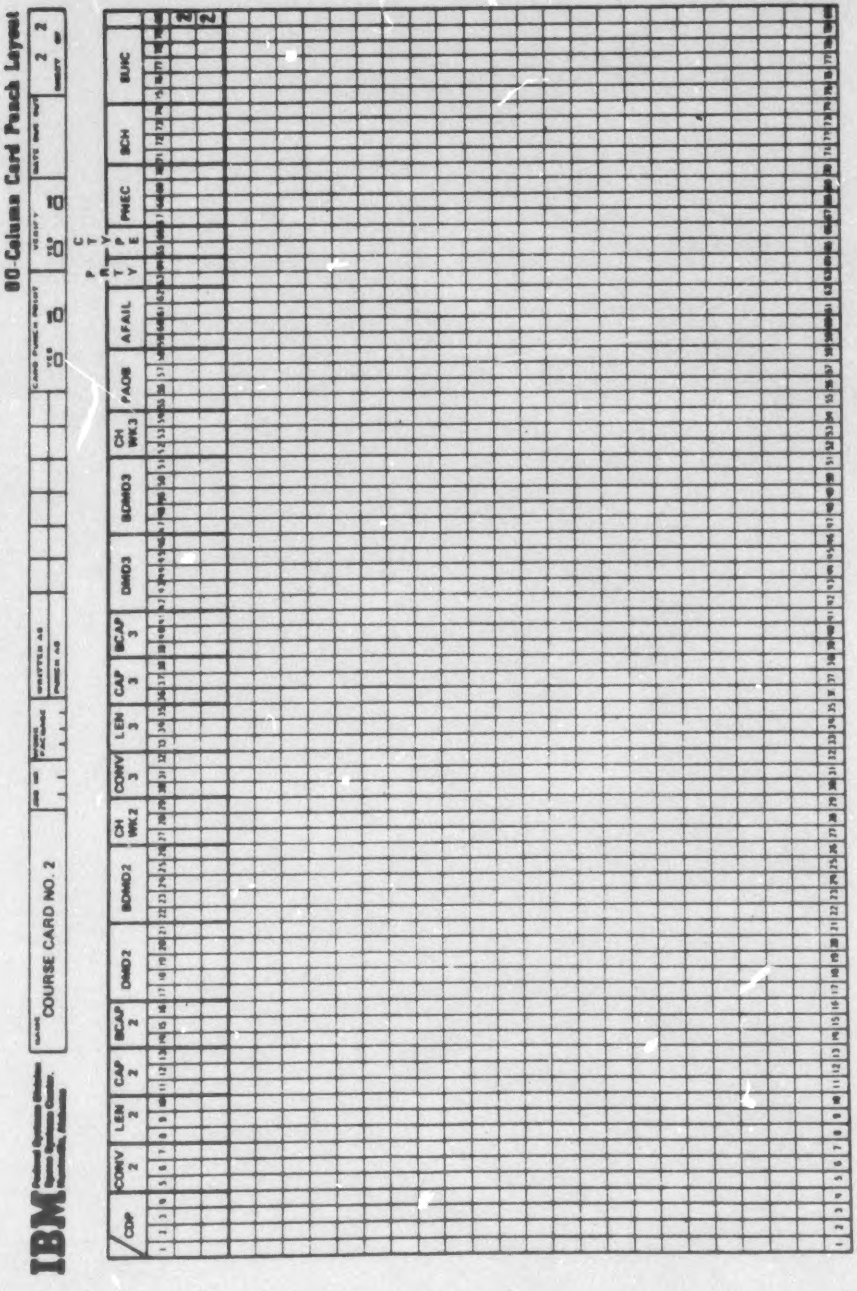

80 Column Card Punch Layout
IBM
COURSE CARD NO. 1
1 2
CDP
CTLG
CRS
CONV 1
LEN 1
CAP 1
BCAP 1
DMD1
BDMD1
OF ST
PFAIL
NADIS
NO SHOW
SETB
BKLG
JNO
955-1115-0

EXECUTIVE: E43

FILE: Course

FUNCTION: Load the Course Master
Data Base From Card Input

COURSE DATA BASE TYPE -2- INPUT CARD FORMAT


80-Column Card Punch Layout
IBM
COURSE CARD NO. 2
2 2
CDP
CONV 2
LEN 2
CAP 2
SCAP 2
DMD2
BDMD2
CH WK2
CONV 3
LEN 3
CAP 3
SCAP 3
DMD3
BDMD3
CH WK3
PAOB
AFAIL
PRTY
CTYPE
PNEC
SCH
SUNC
2
2

EXECUTIVE: E44

FILE: Course

FUNCTION: Load the Course Master
Data Base from Card Input

EXECUTIVE TYPE

The Course master data base is loaded from scratch by using the following Executive routines (in the sequence indicated):

Executive	Input Card Format	Input Data Content
E43	Course File, TYPE -1- and TYPE -2- Input Data Cards	Course Fixed Information
E44	Course File, TYPE -3- Input Data Card	Extension of Course Fixed Information
E34	Instructor File, TYPE -2- Input Data Card	Instructor Assignments to Courses

In a normal operation, the sequence of load Executives indicated above should be maintained.

If no TYPE -3- input data cards are available, they may be omitted from the load sequence and Executive E44 run at the convenience of the user.

If Executives E43 and E33 are to be run, the order must be E43; then, E34. E43 must run successfully, if error-free operation of E34 is anticipated.

The format of the card input data set associated with Executive E44 is illustrated in the diagram below entitled "Course Data Base TYPE -3- Input Card Format". The actual punched cards that make up this input data set must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read in the NCSS computer system via a remote card reader.

Input to Executive E44 is named:

Filename = E44

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation, Executive E44 will indicate via an error message if the input data set E44 DATA is not present.

Executive E44 is invoked by the following terminal keyboard entry:

```
e44     (CR)
```

Once Executive E44 has successfully located its input data set and commenced load operations, no further action on the part of the user is required or requested.

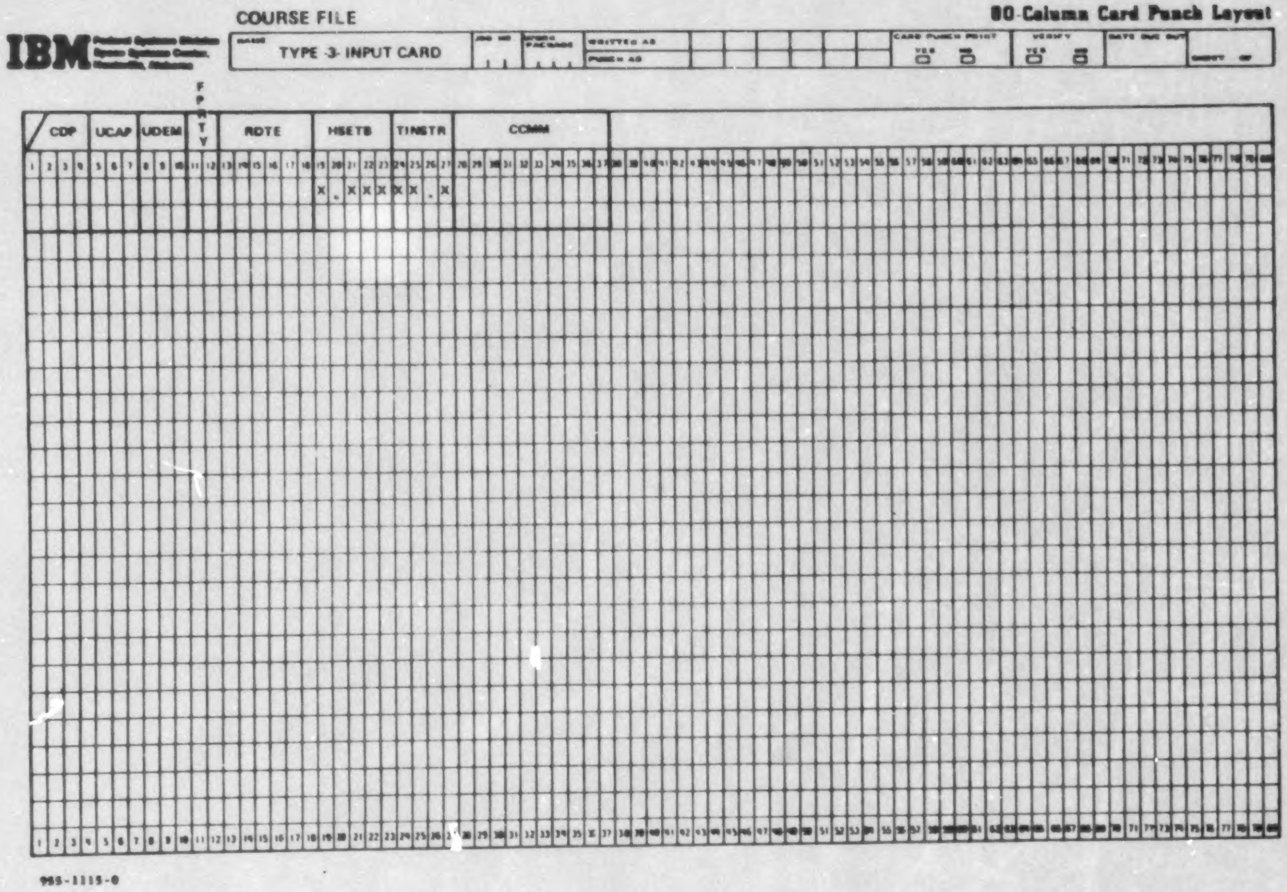
TAEG REPORT NO. 30

EXECUTIVE: E44

FILE: Course

FUNCTION: Load the Course Master
Data Base from Card Input

COURSE DATA BASE TYPE -3- INPUT CARD FORMAT



COURSE FILE

80-Column Card Punch Layout

IBM

TYPE -3- INPUT CARD

CDP	UCAP	UDEM	FPRTY	RDTE	HSETB	TINSTR	COMM
1 2 3 4	5 6 7	8 9 10	11 12	13 14 15 16 17 18	19 20 21 22 23	24 25 26 27	28 29 30 31 32 33 34 35 36 37
					X . X X X	X X . X	

955-1115-0

EXECUTIVE: E34

FILE: Course

FUNCTION: Load the Course Master
Data Base From Card Input

EXECUTIVE TYPE

The Course master data base is loaded from scratch by using the following Executive routines (in the sequence indicated):

Executive	Input Card Format	Input Data Content
E43	Course File, TYPE -1- and TYPE -2- Input Data Cards	Course Fixed Information
E44	Course File, Type -3- Input Data Card	Extension of Course Fixed Information
E34	Instructor File, Type -2- Input Data Card	Instructor Assignments to Courses

In a normal load operation, the sequence of load Executives indicated above should be maintained.

If no TYPE -3- input data cards are available, they may be omitted from the load sequence and Executive E44 run at the convenience of the User.

If Executives E43 and E33 are to be run, the order must be E43; then, E34. E43 must run successfully, if error-free operation of E34 is anticipated.

The format of the card input data set associated with Executive E34 is illustrated in the diagram below entitled "Instructor Data Base Type -2- Input Card Format". The actual punched cards that make up this input data set must be at the NCSS computer location. The cards will have actually been mailed to NCSS or read in the NCSS computer system via a remote card reader.

Input to Executive E34 is named:

Filename = E34

Filetype = DATA

Once the cards are in the NCSS computer spool, they may be accessed using the normal OFFLINE READ CSS-mode command.

Upon invocation, Executive E34 will indicate via an error message if the input data set E34 DATA is not present.

EXECUTIVE TYPE (Continued)

Executive E34 is invoked by the following terminal keyboard entry:

```
e34    (CR)
```

Once Executive E34 has successfully located its input data set and commenced load operations, no further action on the part of the User is required or requested.

SAMPLE TERMINAL RUN OF EXECUTIVE E34

```
21.12.22 E34
      NUMBER OF RECORDS UPDATED=          0   INCLUDED=        32
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

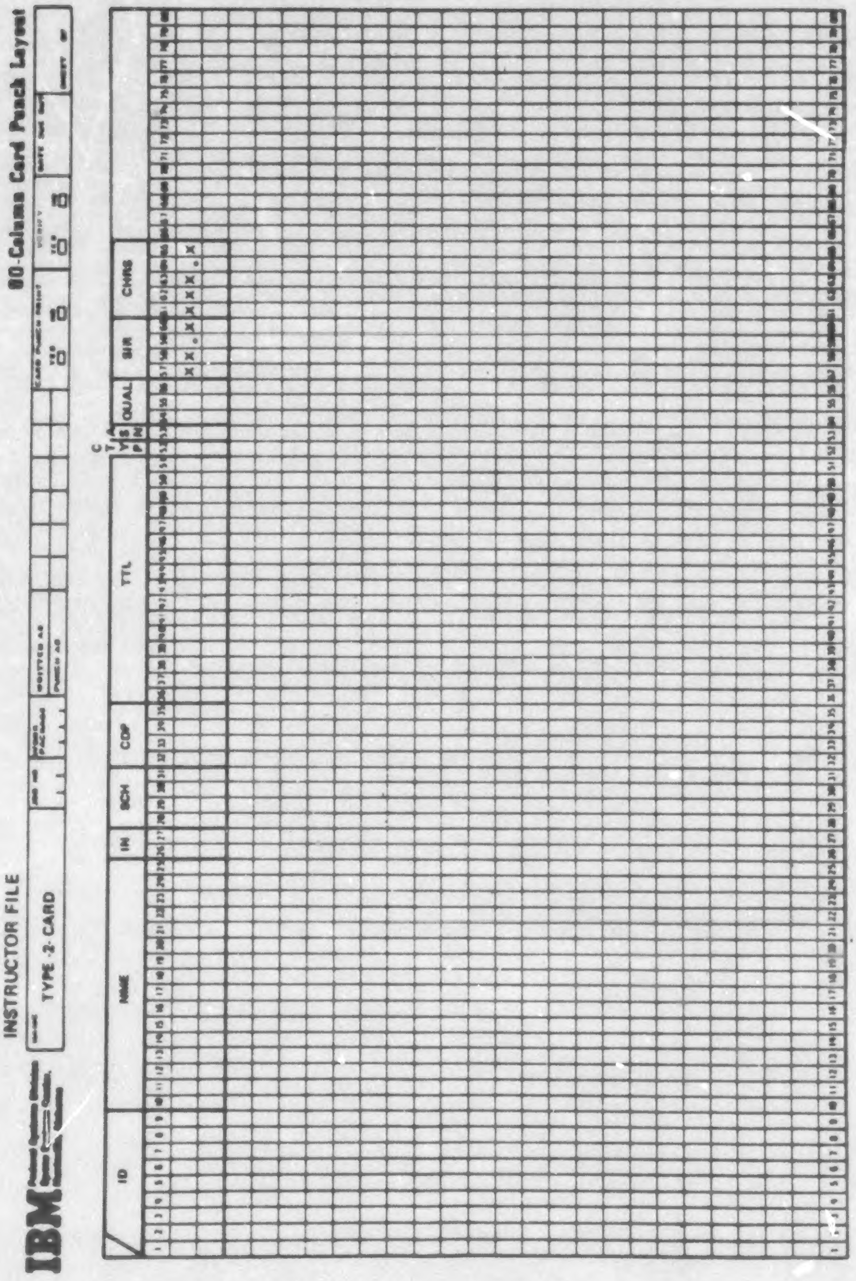
TAEG REPORT NO. 30

EXECUTIVE: E34

FILE: Course

FUNCTION: Load the Course Master Data
Base From Card Input

INSTRUCTOR (COURSE) DATA BASE TYPE -2- INPUT CARD FORMAT


INSTRUCTOR FILE
IBM
TYPE -2- CARD
80-Column Card Punch Layout
ID
NME
IN
SCH
CDP
TTL
CTYP
ASN
QUAL
SIR
CHRS
XX.XXXX.X
988-1115-0

EXECUTIVE: E51

FILE: Course Master Data Base,
Course Scratch Data Base

FUNCTION: Erase and Remake the Course
Scratch Data Base by Copying the
Records of One Selected School
From the Course Master

EXECUTIVE TYPE

Executive E51 serves to copy all of the records associated with a User-selected school from the Course master data base into the Course scratch data base.

Executive E51 is invoked via the following CSS-mode entry:

```
e51    (CR)
```

Upon invocation, this Executive will respond with a prompt line (see the example run, below) requesting that the name of the desired school be specified by the User. If, at this time, the following entry is made:

```
out    (CR)
```

action of Executive E51 will be aborted and no further data maintenance will result.

If the desired school name entry is made, Executive E51 will commence operation and no further action is required or solicited from the User.

Executive E51 begins operation by erasing any previous contents of the Course scratch data base. At the completion of Executive E51 operations, any (if any) previous contents of the Course scratch data base will be irrecoverably lost. The scratch data base will contain only those records associated with the selected school.

SAMPLE TERMINAL RUN OF EXECUTIVE E51

```
16.32.40 E51
* FUNCTION - SELECT SCHOOL FOR MODEL INPUT
*
* ENTER SCHOOL CODE (SCH), A4
AC&R
 NUMBER OF RECORDS DUMPED=      53
** TOTAL INPUT CARDS PROCESSED =    159; TOTAL TRANSACTIONS =     53
      NUMBER OF RECORDS ENTERED=       53
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E50

FILE: Course Master Data Base,
Course Scratch Data Base

FUNCTION: Erase and Remake the Course
Scratch Data Base by Copying
the Course Master Data Base
in its Entirety

EXECUTIVE TYPE

Executive E50 serves to copy intact all of the records of the Course master data base into the Course scratch data base.

Since all records are processed and transferred, the scratch data base will be an exact duplicate of the master after Executive E50 processing is completed.

Executive E50 begins operation by erasing any previous contents of the Course scratch data base. At the conclusion of Executive E50 operation, any (if any) previous contents of the Course scratch data base will be irrecoverably lost.

Executive E50 is invoked via the following entry:

```
e50  (CR)
```

Once this Executive has commenced operation, no further action is requested or required from the User.

SAMPLE TERMINAL RUN OF EXECUTIVE E50

```
16.25.25 E50
    NUMBER OF RECORDS DUMPED=    1135
*** TOTAL INPUT CARDS PROCESSED = 3,405; TOTAL TRANSACTIONS = 1,135
        NUMBER OF RECORDS ENTERED=     1135
```

If the number of records entered is zero (0), an unsuccessful execution is indicated. In the event of unsuccessful execution, the User may anticipate other RAMIS messages to assist in diagnosing the source of the problem.

EXECUTIVE: E58

FILE: Course

FUNCTION: Terminal (Display) Dump of Data Base Contents

This Executive causes a formatted dump to be displayed of all of the records contained within the Course master data base. No further User input is required once this Executive is invoked.

The following keyboard insertion initiates run of this Executive:

e58 (CR)

SAMPLE TERMINAL RUN OF EXECUTIVE E58

```
15.27.51 E58


2573      BW/FW T/T RECERT      --SCHEDULE DATA--     FY     FY+1    FY+2   CHANGE DATE
                                ANNUAL CONVENINGS     11       0       0    OFFSET     0
SCHL JNO  CATALOG NO  PNEC      COURSE LENGTH        3.0      .0      .0    FY+1 WK    0
AC&R      A-651-0051            COURSE CAPACITY       16       0       0    FY+2 WK    0
                                BUPERS CAPACITY        0       0       0
PAOB PFAIL AFAIL TYPE PRTY      ANNUAL DEMAND         46      46      46   BACKLOG     0
   0  .000  .000  F1    0       BUPERS DEMAND          0       0       0

   CCMM      SUIC      RDTE   FPRTY  NADIS  NOSHOW SETB  ASETB  UCAP UDEM  TINSTR
                          0      0    .000   .000   .000  .000    26    0      .0

                        !----------------- INSTRUCTOR ASSIGNMENTS -----------------
SIR   CHRS    CTYP      !INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN
 .0     .0              !                  1 !                    !
                        !                    !                    !
18.0    5.0  1          !246565800   25    1 !420449394  100   1  !135321858  100   1
                        !509384761   0     0 ,


3102     AIR COND REFRIG        --SCHEDULE DATA--     FY     FY+1    FY+2   CHANGE DATE
                                ANNUAL CONVENINGS     25       0       0    OFFSET     0
SCHL JNO  CATALOG NO  PNEC      COURSE LENGTH       54.0      .0      .0    FY+1 WK    0
AC&R 4552 A-720-0010  4294      COURSE CAPACITY       16       0       0    FY+2 WK    0
                                BUPERS CAPACITY ..    13       0       0
PAOB PFAIL AFAIL TYPE PRTY      ANNUAL DEMAND        334     290     285   BACKLOG    30
 490  .100  .011  C1    5       BUPERS DEMAND        326     326     326

   CCMM      SUIC      RDTE   FPRTY  NADIS  NOSHOW SETB  ASETB  UCAP UDEM  TINSTR
                          0      0    .030   .000   .022  .000    95    0      .0

                        !----------------- INSTRUCTOR ASSIGNMENTS -----------------
SIR   CHRS    CTYP      !INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN
 .0     .0              !                  1 !                    !
                        !                    !                    !
 5.0  106.0  2          !229443709   0     0 !242567014   0     0 !301569726   0     0
                        !006366936   0     0 !267805274   25    1 !178325971   0     0
                        !423461083   50    1 !434681724   35    1 !216483840   25    1
                        !497463436   0     0 !278349405   0     0 !570581949   0     0
                        !                    !                    !
16.0  134.0  1          !242567014   0     0 !301569726   0     1 !006366936   0     0
                        !267805274   25    1 !178325971   0     0 !423461083   50    1
                        !434681724   35    1 !216483840   25    1 !497463436   0     0
```

EXECUTIVE: E37

FILE: Course Scratch Data Base

FUNCTION: Terminal (Display) Dump of
Data Base Contents

This Executive causes a formatted dump to be displayed of all of the records of the Course scratch data base. No further User is required or requested once Executive E37 has commenced operation.

To invoke Executive E37, the following keyboard entry is required:

```
e37 (CR)
```

SAMPLE TERMINAL RUN OF EXECUTIVE E37

```
15.33.13 E37

2573     BW/FW T/T RECERT      --SCHEDULE DATA--    FY    FY+1    FY+2   CHANGE DATE
                               ANNUAL CONVENINGS    11       0       0   OFFSET     0
SCHL JNO  CATALOG NO  PNEC     COURSE LENGTH       3.0      .0      .0   FY+1 WK    0
AC&R      A-651-0051           COURSE CAPACITY      16       0       0   FY+2 WK    0
                               BUPERS CAPACITY       0       0       0
PAOB PFAIL AFAIL TYPE PRTY     ANNUAL DEMAND        46      46      46  BACKLOG     0
   0  .000  .000  F1    0      BUPERS DEMAND         0       0       0

   CCMM      SUIC     RDTE    FPRTY  NADIS   NOSHOW SETB  ASETB  UCAP UDEM  TINSTR
                         0      0     .000    .000    .000  .000    26    0      .0

                        !----------------- INSTRUCTOR ASSIGNMENTS -----------------
SIR    CHRS    CTYP     !INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN
  .0      .0            !                  1 !                    !
                        !                    !                    !
18.0      5.0  1        !246565800  25     1 !420449394  100   1  !135321858  100   1
                        !509384761   0     0

3102     AIR COND REFRIG       --SCHEDULE DATA--    FY    FY+1    FY+2   CHANGE DATE
                               ANNUAL CONVENINGS    25       0       0   OFFSET     0
SCHL JNO  CATALOG NO  PNEC     COURSE LENGTH      54.0      .0      .0   FY+1 WK    0
AC&R 4552 A-720-0010  4294     COURSE CAPACITY      16       0       0   FY+2 WK    0
                               BUPERS CAPACITY      13       0       0
PAOB PFAIL AFAIL TYPE PRTY     ANNUAL DEMAND       334     290     285  BACKLOG    30
 490  .100  .011  C1    5      BUPERS DEMAND       326     326     326

   CCMM      SUIC     RDTE    FPRTY  NADIS   NOSHOW SETB  ASETB  UCAP UDEM  TINSTR
                         0      0     .030    .000    .022  .000    95    0      .0

                        !----------------- INSTRUCTOR ASSIGNMENTS -----------------
SIR    CHRS    CTYP     !INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN!INSTR-ID   QUAL ASSN
  .0      .0            !                  1 !                    !
                        !                    !                    !
  5.0  106.9   2        !229443709   0     0 !242567014   0     0 !301569726   0     0
                        !006366936   0     0 !267805274  25     1 !178325971   0     0
                        !423461083  50     1 !434681724  35     1 !216483840  25     1
                        !497463436   0     0 !278349405   0     0 !570581949   0     0
                        !                    !                    !
 16.0  134.0   1        !242567014   0     0 !301569726   0     1 !006366936   0     0
                        !267805274  25     1 !178325971   0     0 !423461083  50     1
                        !434681724  35     1 !216483840  25     1 !497463436   0     0
```

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W40 is invoked by the following CSS Mode entry:

```
w40     CR
```

Upon invocation, the Executive will produce the following entry text:

```
                                  CSS Mode Time Prompt
14.55.01    w40     CR
*
* FUNCTION - ADD A NEW SCHOOL, AND/OR COURSE
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  CR
```

Use of this entry implies that Executive W40 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W40 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W40 will issue terminal prompt messages for the Course Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

Data Fields Prompted by Executive W40

			Numeric	
Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Low Limit	High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
	Course Delete Flag (DEL), A1 1 = Course Active 2 = Course Deleted	1		
	Course Catalog Number (CTLG), A4	Blank		
	Course Title (CRS), A16	Blank		
	Convenings Number 1 (CONV1), I3	0	0	
	Course Length #1 (LEN1), F4.1	0	0	

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

Data Fields Prompted by Executive W40 (continued)

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
	Capacity #1 (CAP1), I3	0	0	
	BUPERS Capacity #1 (BCAP1), I3	0	0	
	Demand #1 (DMD1), I5	0	0	
	BUPERS Demand #1 (BDMD1), I5	0	0	
	Schedule Offset (OFST), I2	0	0	
	Failure Rate (PFAIL), F5.3	0	0	
	NONAC Disenrollment (NADIS), F5.3	0	0	
	No-Show Percent (NOSHOW), F5.3	0	0	
	Percent Setbacks (SETB), F5.3	0	0	
	Number Backlogs (BKLG), I4	0	0	
	Course J-Number (JNO), A4	Blank		
	Convenings #2 (CONV2), I3	0	0	
	Length #2 (LEN2), F4.1	0	0	
	Capacity #2 (CAP2), I3	0	0	
	BUPERS Capacity #2 (BCAP2), I3	0	0	
	Demand #2 (DMD2), I5	0	0	
	BUPERS Demand #2 (BDMD2), I5	0	0	
	Change Week #2 (CHWK2), I3	0	0	
	Convenings #3 (CONV3), I3	0	0	
	Length #3 (LEN3), F4.1	0	0	

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

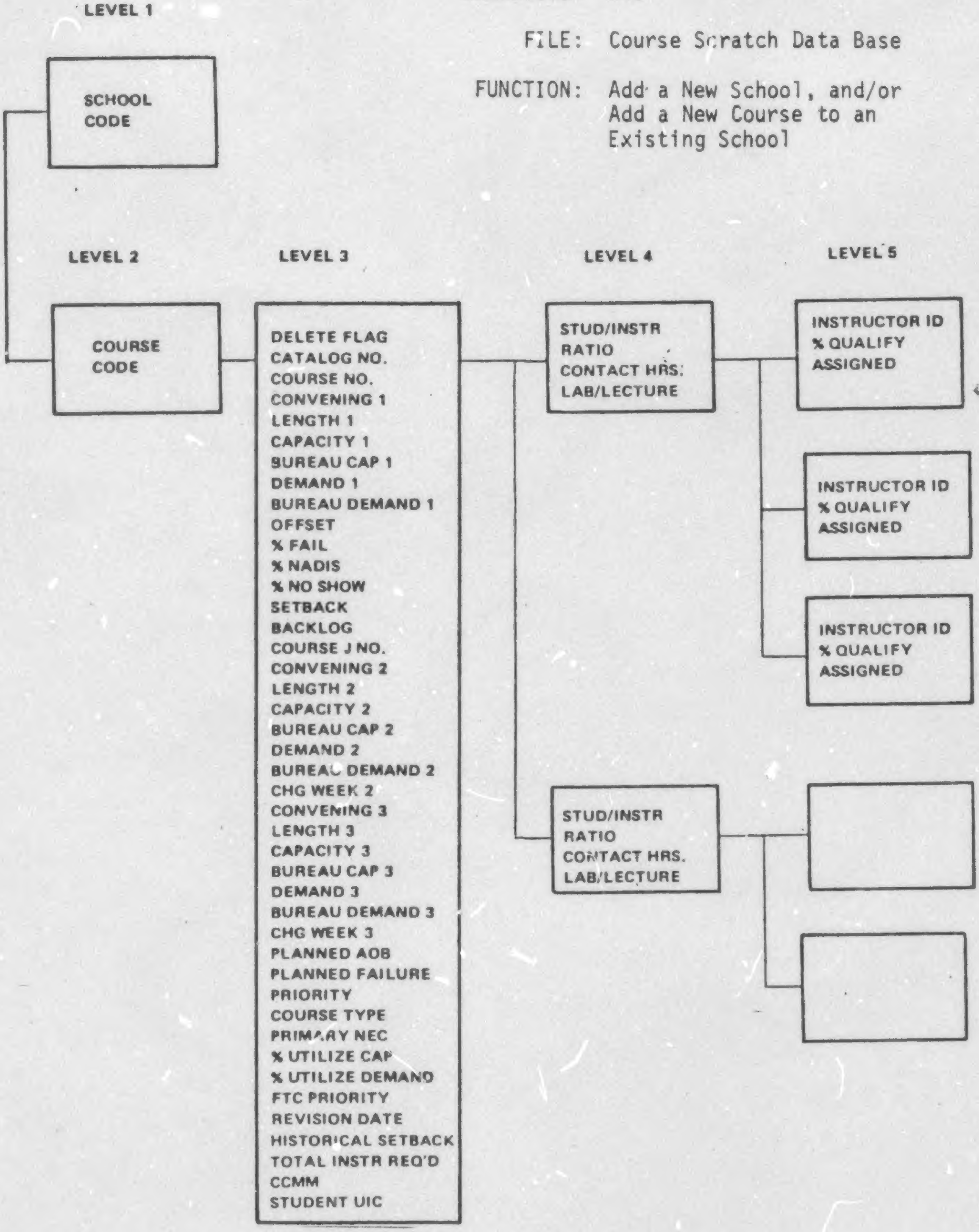
Data Fields Prompted by Executive W40 (continued)

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
	Capacity #3 (CAP3), I3	0	0	
	BUPERS Capacity #3 (BCAP3), I3	0	0	
	Course Demand #3 (DMD3), I5	0	0	
	BUPERS Demand #3 (BDMD3), I5	0	0	
	Change Week #3 (CHWK3), I3	0	0	
	Planned AOB (PAOB), I4	0	0	
	Academic Failures (AFAIL), F5.3	0	0	
	Course Priority (PRTY), I2	0	0	
	Course Type (CTYPE), A2	Blank		
	Primary NEC (PNEC), A4	Blank		
	% Capacity Utilized (UCAP), I3	0	0	
	% Demand Utilized (UDEM), I3	0	0	
	FTC Priority (FPRTY), I2	0	0	
	Revisions Date (RDTE), I6	0	0	
	Historical Setback (HSETB), F5.3	0	0	
	Total Instructors Required (TINSTR), F4.1	0	0	
	Student UIC (SUIC), A5	Blank		
	Course CCMM (CCMM), A10	Blank		

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

SAMPLE TERMINAL RUN OF EXECUTIVE W40

```
08.50.01 W40
∷ FUNCTION - ADD A NEW SCHOOL,
∷ SPECIFY EITHER NEW OR CHANGE ∷
_NEW
∷
∷ ENTER SCHOOL CODE (SCH), A4
_LSU
∷
∷ ENTER COURSE CDP (CDP), A4
_3XXX
∷
∷ ENTER DELETE FLAG (DLL), A1
∷    1 = COURSE ACTIVE
∷    2 = COURSE HAS BEEN DELETED
_1
∷
∷ ENTER COURSE CATALOG NUMBER, A4
_NO
∷
∷ ENTER COURSE TITLE (CRS), A16
_REMEDIAL SPELING
∷
∷ ENTER CONVENINGS NUMBER1 (CONV1), I3
_20
∷
∷ ENTER COURSE LENGTH #1 (LEN1), F4.1
_4
∷
∷ ENTER COURSE CAPACITY #1 (CAP1), I3
_10
∷
∷ ENTER BUPERS CAPACITY #1 (BCAP1), I3
_DONE
∷
∷ TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
           NUMBER OF RECORDS UPDATED=       0  INCLUDED=        1
```

EXECUTIVE: W40

FILE: Course Scratch Data Base

FUNCTION: Add a New School, and/or
Add a New Course to an
Existing School

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W40 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W41

FILE: Course Scratch Data Base

FUNCTION: Add a Student/Instructor
Ratio and an Instructor
to an Existing Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W41 is invoked by the following CSS Mode entry:

```
w41 (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                                CSS Mode Time Prompt
14.55.01   w41  (CR)
*
* FUNCTION - ADD A STUDENT/INSTR RATIO AND AN
*     INSTRUCTOR TO AN EXISTING COURSE...
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change (CR)
```

Use of this entry implies that Executive W41 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W41 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
* CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W41

FILE: Course Scratch Data Base

FUNCTION: Add a Student/Instructor Ratio and an Instructor to an Existing Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W41 will issue terminal prompt messages for the Course Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

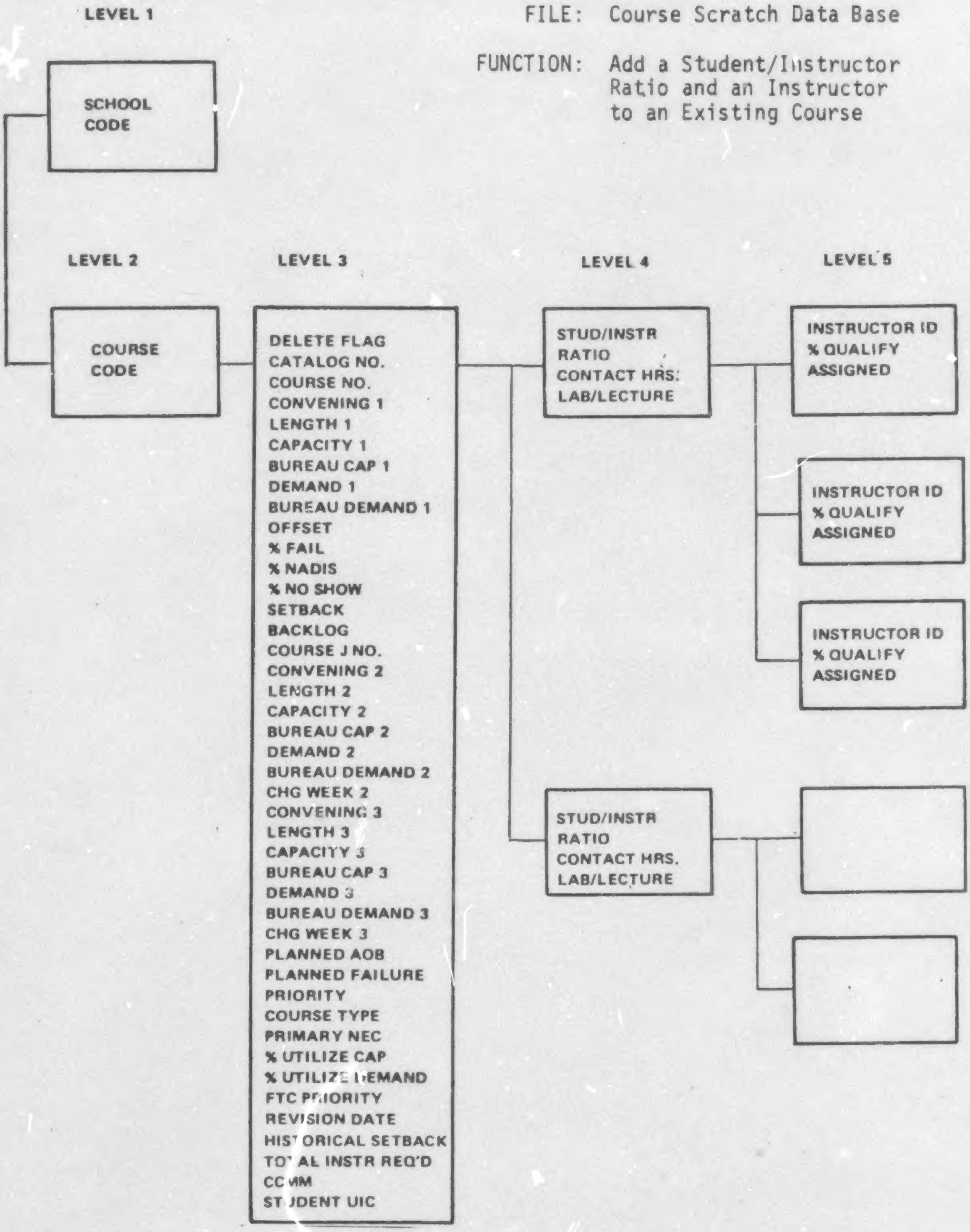
Data Fields Prompted by Executive W41

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1			
	Instr Contact Hours (CHRS), F5.1	0	0	
*	Course Type (CTYP), A1			
*	Instructor ID (ID), A9			
	Instr Qualify (QUAL), A3	Blank		
*	Instr Assign Flag (ASN), A1			

EXECUTIVE: W41

FILE: Course Scratch Data Base

FUNCTION: Add a Student/Instructor Ratio and an Instructor to an Existing Course


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
COMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W41

FILE: Course Scratch Data Base

FUNCTION: Add a Student/Instructor
Ratio and an Instructor
to an Existing Course

SAMPLE TERMINAL RUN OF EXECUTIVE W41

```
09.28.26 W41
* FUNCTION - ADD A STUDENT/INSTR RATIO
*            AND AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*

* ENTER SCHOOL CODE (SCH), A4
_LSU
*

* ENTER COURSE CDP (CDP), A4
_3XXX
*

* ENTER STUDENT/INSTR RATIO (SIR), F4.1
_4
*

* ENTER INSTR CONTACT HRS (CHRS), F5.1
_20
*

* ENTER COURSE TYPE (CTYP), A1
_1
*

* ENTER INSTRUCTOR ID (ID), A9
_123456789
*

* ENTER INSTR % QUALIFIED (QUAL), A3
_100
*

* ENTER ASSIGNED FLAG (ASN), I1
_1
*

* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
         NUMBER OF RECORDS UPDATED=        0  INCLUDED=         1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W41 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W42

FILE: Course Scratch Data Base

FUNCTION: Add a New Instructor to an Existing Student/Instructor Ratio and Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W42 is invoked by the following CSS Mode entry:

```
w42   CR
```

Upon invocation, the Executive will produce the following entry text:

```
                                   CSS Mode Time Prompt
14.55.01   w42   CR
*
* FUNCTION - ADD A NEW INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out   CR
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change   CR
```

Use of this entry implies that Executive W42 has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W42 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new   CR
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W42

FILE: Course Scratch Data Base

FUNCTION: Add a New Instructor to
an Existing Student/
Instructor Ratio and Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W42 will issue terminal prompt messages for the Course Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

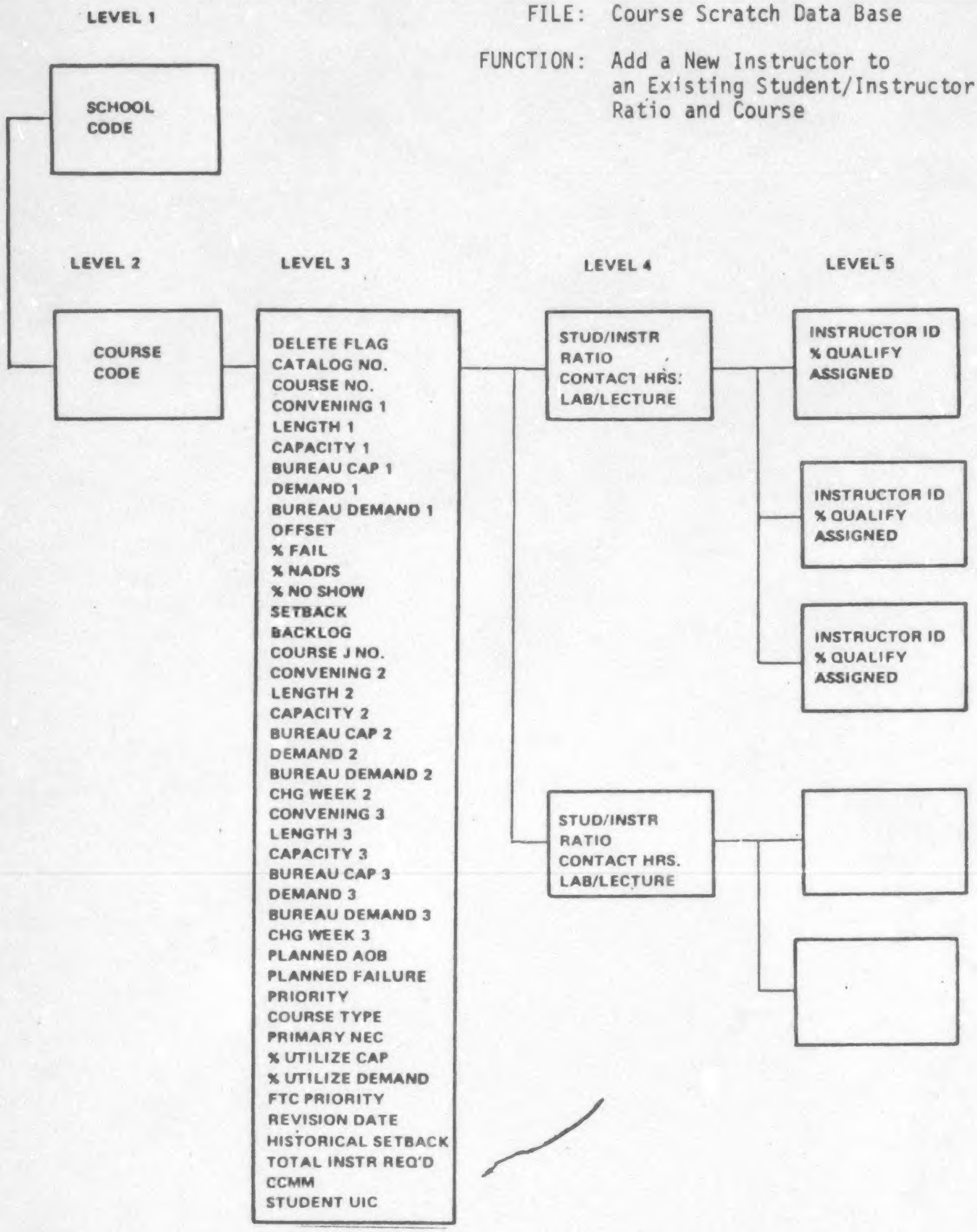
Data Fields Prompted by Executive W42

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1			
	Instr Contact Hours (CHRS), F5.1	0	0	
*	Course Type (CTYP), A1			
*	Instructor ID (ID), A9			
	Instr Qualify (QUAL), A3	Blank		
*	Instr Assign Flag (ASN), A1			

EXECUTIVE: W42

FILE: Course Scratch Data Base

FUNCTION: Add a New Instructor to an Existing Student/Instructor Ratio and Course


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W42

FILE: Course Scratch Data Base

FUNCTION: Add a New Instructor to
an Existing Student/Instructor
Ratio and Course

SAMPLE TERMINAL RUN OF EXECUTIVE W42

```
09.30.59 W42
* FUNCTION - ADD A NEW INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_LSU
*
* ENTER COURSE CDP (CDP), A4
_3XXX
*
* ENTER STUDENT/INSTR RATIO (SIR), F4.1
_4
*
* ENTER INSTR CONTACT HRS (CHRS), F5.1
_NO
*
* ENTER COURSE TYPE (CTYP), A1
_NO
* CANNOT OMIT THIS ENTRY -TRY AGAIN *
*
* ENTER COURSE TYPE (CTYP), A1
_1
*
* ENTER INSTRUCTOR ID (ID), A9
_555667777
*
* ENTER INSTR % QUALIFIED (QUAL), A3
_50
*
* ENTER ASSIGNED FLAG (ASN), I1
_0
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
        NUMBER OF RECORDS UPDATED=        0  INCLUDED=        1
```

EXECUTIVE: W42

FILE: Course Scratch Data Base

FUNCTION: Add a New Instructor to
an Existing Student/
Instructor Ratio and Course

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W42 run.

If the RAMIS messages indicate that zero (0) records have been included/updated, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

As an example of a terminal run of Executive W42 that resulted in RAMIS rejection of the data maintenance transaction, consider the following...

```
09.36.25 W42
* FUNCTION - ADD A NEW INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*

* ENTER SCHOOL CODE (SCH), A4
_LSU
*

* ENTER COURSE CDP (CDP), A4
_3XXX
*

* ENTER STUDENT/INSTR RATIO (SIR), F4.1
_4
*

* ENTER INSTR CONTACT HRS (CHRS), F5.1
_NO
*

* ENTER COURSE TYPE (CTYP), A1
_NO
* CANNOT OMIT THIS ENTRY -TRY AGAIN *
*

* ENTER COURSE TYPE (CTYP), A1
_1
*

* ENTER INSTRUCTOR ID (ID), A9
_555667777
*

* ENTER INSTR % QUALIFIED (QUAL), A3
_50
*

* ENTER ASSIGNED FLAG (ASN), I1
_0
*

* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
       NUMBER OF RECORDS UPDATED=        0  INCLUDED=        0
```

EXECUTIVE: W61

FILE: Course Scratch Data Base

FUNCTION: Change an Existing Field

This function places the user terminal in the standard SCAN mode of the RAMIS data maintenance system.

Executive W61 is invoked via the following technique:

```
w61   CR
```

Executive response to invocation will assume the following pattern:

```
_________                                  CSS Mode Time Prompt
10.55.07   w61   CR   <------------------- User Invocation
           FILE       MODCOURSE
SCAN:
  |
  | <------------------------------------- Standard SCAN Mode Functions may
  |                                        be executed at user's option...
  |
end  <------------------------------------ User entry required to cause exit
                                                from SCAN mode

fin  <------------------------------------ User entry required to return
                                                control from RAMIS to the CSS
                                                Mode of operation
```

USE OF 'SHOW' FUNCTION WHILE IN SCAN MODE

The SCAN mode user is urged to use caution in the selection of the SHOW function parameters as the fields mentioned with this function will determine the extent of any changes introduced into the data base.

The SHOW function may be used freely if the user is merely browsing through the data base and intends no changes.

For the Course Scratch data base, the following field numbers and names are applicable:

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
1	SCH	1	A	4
2	CDP	2	A	4
3	DEL	3	A	1
	CTLG	4	A	10
	CRS	5	A	16
	CONV1	6	I	3
	LEN1	7	F	4.1

(Continued)

EXECUTIVE: W61

FILE: Course Scratch Data Base

FUNCTION: Change an Existing Field

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
	CAP1	8	I	3
	BCAP1	9	I	3
	DMD1	10	I	5
	BDMD1	11	I	5
	OFST	12	I	2
	PFAIL	13	F	5.3
	NADIS	14	F	5.3
	NOSHOW	15	F	5.3
	SETB	16	F	5.3
	BDLG	17	I	4
	JNO	18	A	4
	CONV2	19	I	3
	LEN2	20	I	4.1
	CAP2	21	I	3
	BCAP2	22	I	3
	DMD2	23	I	5
	BDMD2	24	I	5
	CHWK2	25	I	3
	CONV3	26	I	3
	LEN3	27	F	4.1
	CAP3	28	I	3
	BCAP3	29	I	3
	DMD3	30	I	5
	BDMD3	31	I	5
	CHWK3	32	I	3
	PAOB	33	I	4
	AFAIL	34	F	5.3
	PRTY	35	I	2
	CTYPE	36	A	2
	PNEC	37	A	4
	UCAP	38	I	3
	UDEM	39	I	3
	FPRTY	40	I	2
	RDTE	41	I	6
	HSETB	42	F	5.3
	TINSTR	43	F	4.1
	SUIC	44	A	5
	CCMM	45	A	10

(Continued)

EXECUTIVE: W61

FILE: Course Scratch Data Base

FUNCTION: Change an Existing Field

LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
4	SIR	46	F	4.1
	CHRS	47	F	5.1
	CTYP	48	A	1
5	ID	49	A	9
	QUAL	50	A	3
	ASN	51	I	1
6	NME	52	A	16

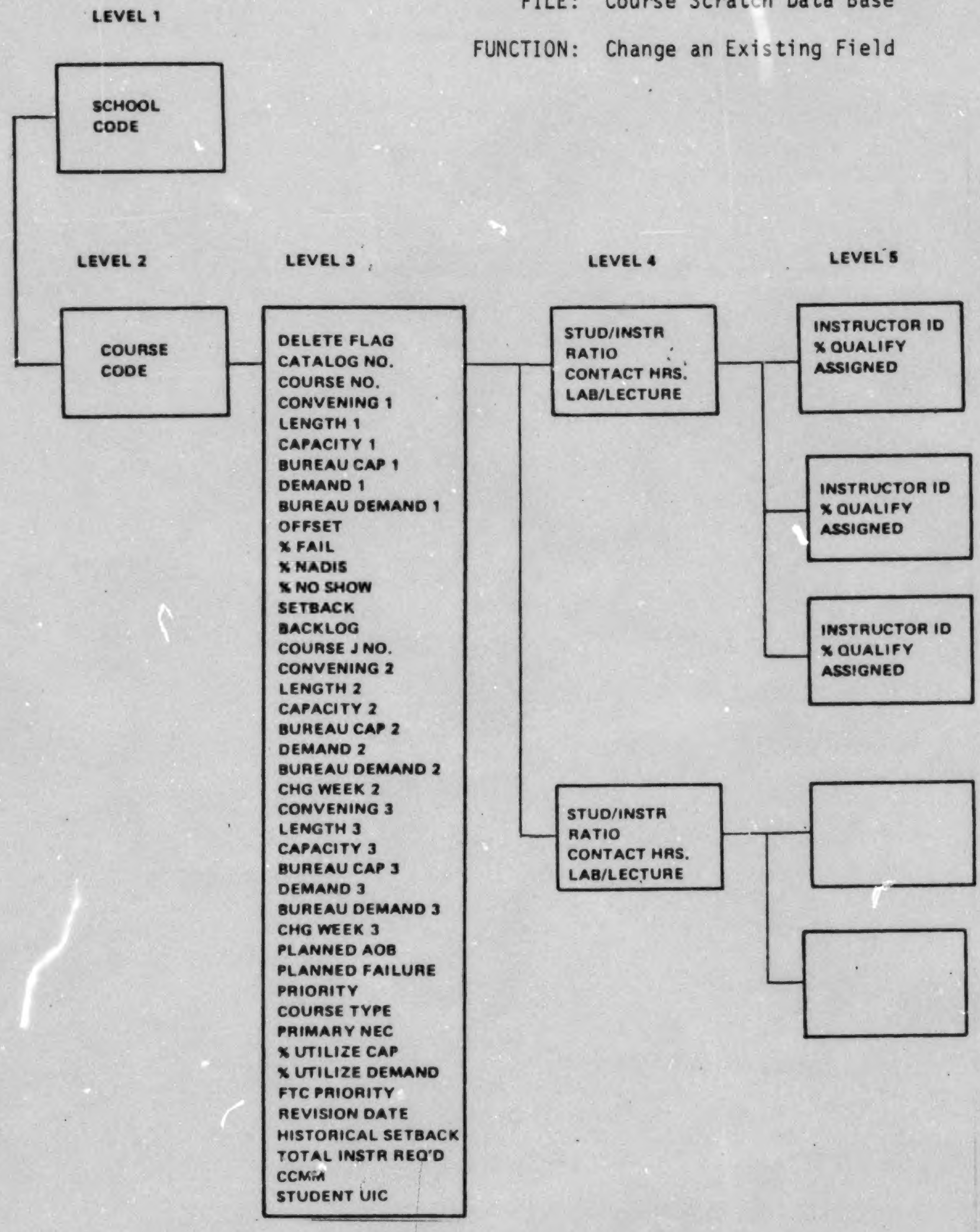
SAMPLE TERMINAL RUN OF EXECUTIVE W61

```
09.59.00 W61
±          FILE MODCOURSE
SCAN:
SHOW 1,2,3
  01 SCH   02 CDP   03 DEL
L 1=LSU,2=3XXX
 01=LSU  02=3XXX 03=1
C 3=±2
 01=LSU  02=3XXX 03=2
END
±FIN
```

EXECUTIVE: W61

FILE: Course Scratch Data Base

FUNCTION: Change an Existing Field


LEVEL 1
SCHOOL CODE
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
COURSE CODE
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W62

FILE: Course Scratch
Data Base

FUNCTION: Delete an Entire School

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W62 is invoked by the following CSS-Mode entry:

```
w62    (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (W62), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out  (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive W62

Mandatory Field (*)	Field Name (Mnemonic), Data Type
*	School Code (SCH), A4

SAMPLE TERMINAL RUN OF EXECUTIVE W62

```
10.07.20 W62
:: FUNCTION - DELETE AN ENTIRE SCHOOL
::
:: ENTER SCHOOL CODE (SCH), A4
LSU
          RECORDS DELETED=      0SEGMENTS DELETED=       1
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W62 run.

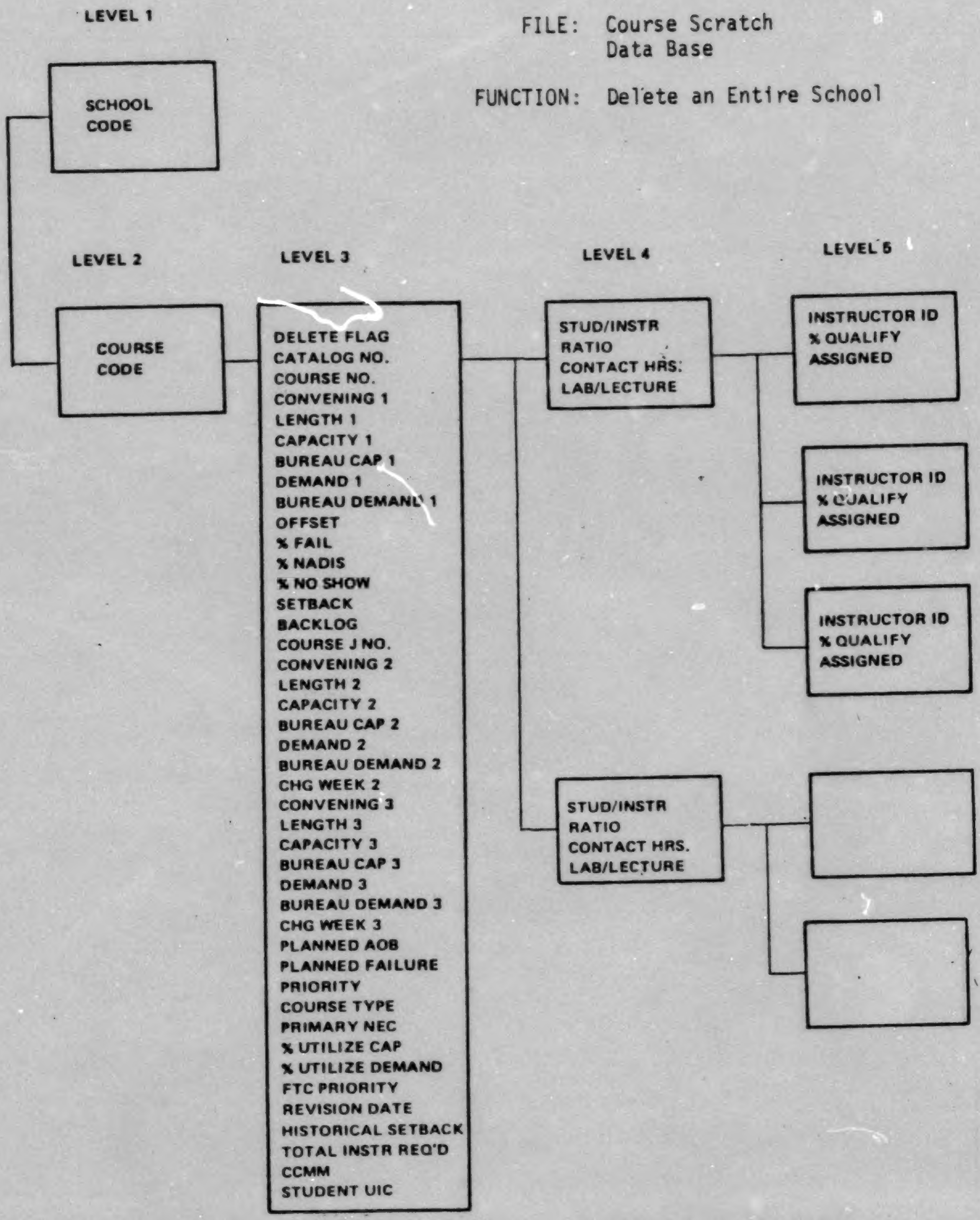
If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W62

FILE: Course Scratch
Data Base

FUNCTION: Delete an Entire School


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
LEVEL 5
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W63

FILE: Course Scratch
Data Base

FUNCTION: Delete a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W63 is invoked by the following CSS-Mode entry:

```
w63 (CR)
```

Upon invocation, the Executive will produce entry text identifying the Executive number (W63), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

```
out (CR)
```

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive W63

Field Name (Mnemonic), Data Type

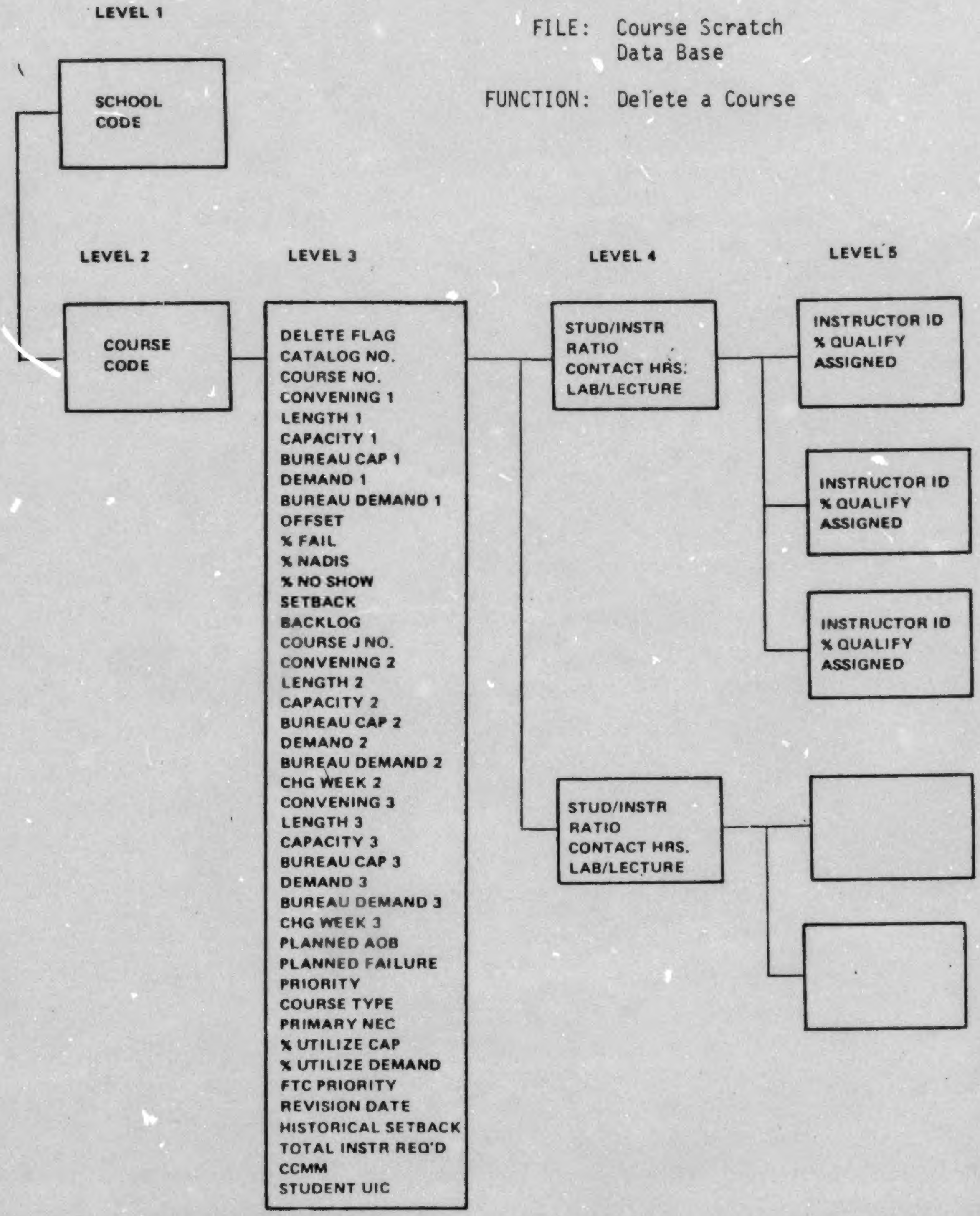
School Code (SCH), A4

Course CDP Number (CDP), A4

EXECUTIVE: W63

FILE: Course Scratch Data Base

FUNCTION: Delete a Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
LEVEL 5
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W63

FILE: Course Scratch
Data Base

FUNCTION: Delete a Course

SAMPLE TERMINAL RUN OF EXECUTIVE W63

```
10.06.13 W63
:: FUNCTION - DELETE A COURSE
::
:: ENTER SCHOOL CODE (SCH), A4
LSU
::
:: ENTER COURSE CDP (CDP), A4
3XXX
          RECORDS DELETED=      1SEGMENTS DELETED=      5
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W63 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W64

FILE: Course Scratch Data Base

FUNCTION: Delete an Instructor From
An Existing Student/
Instructor Ratio and Course

EXECUTIVE TYPE

This is a CLASS A Prompting Type Executive. Executive W64 is invoked by the following CSS Mode entry:

```
w64    (CR)
```

Upon invocation, the Executive will produce the following entry text:

```
                                 CSS Mode Time Prompt
14.55.01    w64    (CR)
*
* FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
```

In accordance with the instructions as presented above, you may make one of the following entries:

```
out  (CR)
```

This entry will cause operation of the Executive to be aborted at this point. No data maintenance operations will be initiated.

```
change  (CR)
```

Use of this entry implies that Executive W64 Has just been run and a complete transaction presented to the transaction file for data maintenance. Any selected field may be examined (current value) and changed if desired; the resulting transaction may be presented for data maintenance via a DONE entry. If CHANGE mode is entered and Executive W64 was not the prompting Executive run previously, the contents of the transaction file cannot be predicted. The results of changing such a transaction and submitting it for data maintenance use is completely unpredictable.

```
new  (CR)
```

This entry implies that a fresh data maintenance transaction is to be constructed. Prompt data for the fields concerned will follow.

Any other entry made at this time will elicit the following prompt program response:

```
*  CANNOT RECOGNIZE LAST ENTRY - TRY AGAIN *
```

followed by a repeat of the entry prompt text in its entirety.

EXECUTIVE: W64

FILE: Course Scratch Data Base

FUNCTION: Delete an Instructor From an Existing Student/Instructor Ratio and Course

DATA FIELDS TO BE SUPPLIED BY THE USER

The general hierarchtic structure of the DOTS Course Scratch Data Base File is depicted in the diagram below. Upon entry to the NEW mode, Executive W64 will issue terminal prompt messages for the Course Scratch Data Base File data fields shown in the table below. The order indicated in the table will be the order of prompt.

An entry must be made for those fields indicated as mandatory. The Executive will continue to prompt for such fields until they are either supplied or the OUT abort option is selected.

After each non-mandatory field is prompted, the entry:

none (CR) /or/ no (CR) /or/ n (CR)

will indicate that the default value of the field is to be used in lieu of a terminal supplied value. After all desired and/or required fields have been entered, an entry of:

done (CR)

will indicate that the data maintenance transaction is to be completed at that point. Any remaining non-mandatory field(s) will be defaulted.

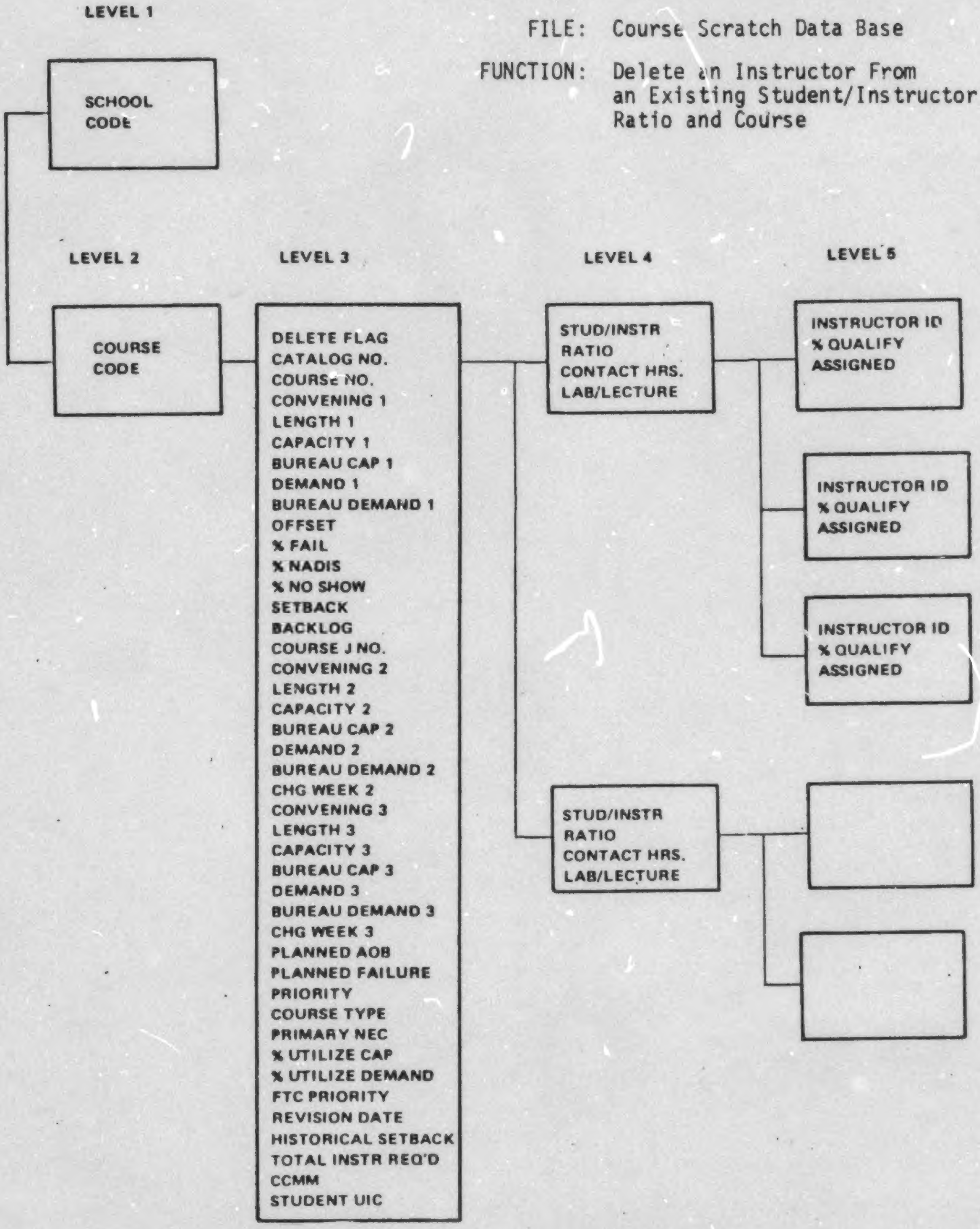
Data Fields Prompted by Executive W64

Mandatory Field (*)	Field Name (Mnemonic), Data Type	Default Value	Numeric Low Limit	Numeric High Limit
*	School Code (SCH), A4			
*	Course CDP Number (CDP), A4			
*	Student/Instructor Ratio (SIR), F4.1	0	0	
*	Instructor ID (ID), A9	Blank		

EXECUTIVE: W64

FILE: Course Scratch Data Base

FUNCTION: Delete an Instructor From
an Existing Student/Instructor
Ratio and Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
STUD/INSTR RATIO CONTACT HRS. LAB/LECTURE
LEVEL 5
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED
INSTRUCTOR ID % QUALIFY ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W64

FILE: Course Scratch Data Base

FUNCTION: Delete an Instructor From
An Existing Student/Instructor
Ratio and Course

SAMPLE TERMINAL RUN OF EXECUTIVE W64

```
10.01.27 W64
* FUNCTION - DELETE AN INSTRUCTOR
* SPECIFY EITHER NEW OR CHANGE *
_NEW
*
* ENTER SCHOOL CODE (SCH), A4
_LSU
*
* ENTER COURSE CDP (CDP), A4
_3XXX
*
* ENTER STUDENT/INSTR RATIO (SIR), F4.1
_4
*
* ENTER INSTRUCTOR ID (ID), A9
_111223333
*
* TRANSACTION(S) HAS/HAVE BEEN REWRITTEN
        RECORDS DELETED=      1SEGMENTS DELETED=      2
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W64 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

EXECUTIVE: W65

FILE: Course Scratch
Data Base

FUNCTION: Delete a Student/
Instructor Ratio
From a Course

EXECUTIVE TYPE

This is a Class B prompting type Executive. Executive W65 is invoked by the following CSS-Mode entry:

w65 (CR)

Upon invocation, the Executive will produce entry text identifying the Executive number (W65), the file (data base) concerned, and the function of the Executive. Prompting text will follow, requesting keyboard input of the data values indicated in the table below.

All data fields for this type of Executive are mandatory - a specific value must be provided for each prompt.

At any time before insertion of the last data field entry, the entry:

out (CR)

will cause premature exit from the Executive without further data maintenance operations.

Data Fields Prompted by Executive W65

Field Name (Mnemonic), Data Type

School Code (SCH), A4

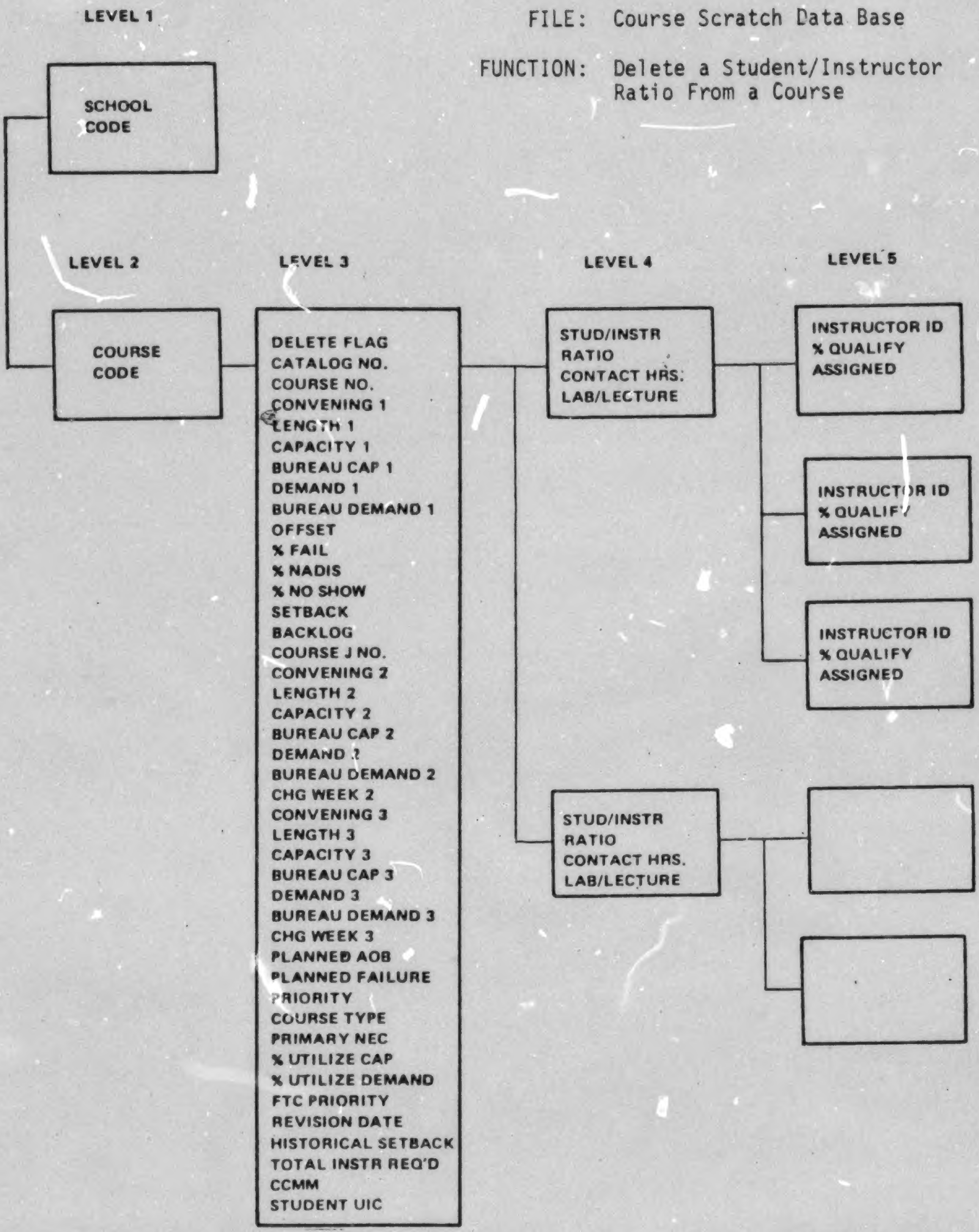
Course CDP Number (CDP), A4

Student/Instructor Ratio (SIR), F4.1

EXECUTIVE: W65

FILE: Course Scratch Data Base

FUNCTION: Delete a Student/Instructor Ratio From a Course


LEVEL 1
SCHOOL CODE
LEVEL 2
COURSE CODE
LEVEL 3
DELETE FLAG
CATALOG NO.
COURSE NO.
CONVENING 1
LENGTH 1
CAPACITY 1
BUREAU CAP 1
DEMAND 1
BUREAU DEMAND 1
OFFSET
% FAIL
% NADIS
% NO SHOW
SETBACK
BACKLOG
COURSE J NO.
CONVENING 2
LENGTH 2
CAPACITY 2
BUREAU CAP 2
DEMAND 2
BUREAU DEMAND 2
CHG WEEK 2
CONVENING 3
LENGTH 3
CAPACITY 3
BUREAU CAP 3
DEMAND 3
BUREAU DEMAND 3
CHG WEEK 3
PLANNED AOB
PLANNED FAILURE
PRIORITY
COURSE TYPE
PRIMARY NEC
% UTILIZE CAP
% UTILIZE DEMAND
FTC PRIORITY
REVISION DATE
HISTORICAL SETBACK
TOTAL INSTR REQ'D
CCMM
STUDENT UIC
LEVEL 4
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
STUD/INSTR RATIO
CONTACT HRS.
LAB/LECTURE
LEVEL 5
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED
INSTRUCTOR ID
% QUALIFY
ASSIGNED

DOTS COURSE FILE – HIEARCHTIC STRUCTURE

EXECUTIVE: W65

FILE: Course Scratch Data Base

FUNCTION: Delete a Student/Instructor
Ratio From a Course

SAMPLE TERMINAL RUN OF EXECUTIVE W65

```
10.04.56 W65
:: FUNCTION - DELETE A STUDENT/INSTRUCTOR RATIO FROM A COURSE
::
:: ENTER SCHOOL CODE (SCH), A4
LSU
::
:: ENTER COURSE CDP (CDP), A4
3XXX
::
:: ENTER STUDENT/INSTRUCTOR RATIO (SIR), F4.1
4
         RECORDS DELETED=       2SEGMENTS DELETED=       5
```

The RAMIS maintenance messages that appear above are considered normal and indicate that a data maintenance operation was attempted using the transaction produced by the Executive W65 run.

If the RAMIS messages indicate that zero (0) records/segments have been deleted, you may assume that the RAMIS system found the transaction in error and has rejected the data maintenance request.

In the instance of error, additional RAMIS messages will appear to indicate the source of the error.

SECTION III

EDUCATIONAL TECHNOLOGY EVALUATION MODEL

ETE MODEL ARCHITECTURE

With the increasing emphasis on self-paced, individualized instruction in naval training, there is a requirement for a method for predicting the resources necessary to support individualized instruction and for evaluating different types of administration for such systems.

MODEL DESCRIPTION. The Educational Technology Evaluation (ETE) model is a generalized, discrete simulation model designed to simulate the flow of students through an Individualized Learning System (ILS). Its purpose is to permit simulation of a variety of ILS configurations, student flows, and course strategies by manipulation of input data alone rather than by modification of the model logic itself. It is the generality of the model that is the key factor in its design.

Of equal importance to the ILS designer or manager is ease of use. The simulation system must not only be capable of simulating different kinds of IL systems but must be usable without assistance from a computer programmer or systems anslyst. To this end the ETE model has been structured so the user can generate or update an ILS simulation by responding to English language questions via a remote terminal.

Models developed via ETE have the following IL System options:

a. A single course, or multiple courses.

b. Different media characteristics specified by module.

c. Individual and team training modules.

d. Instructors assigned by qualifications and responsible for specific modules.

e. Remediation activities, including probability of occurrence and required support.

The ETE model can be applied to IL systems when they are being designed or to IL systems which are already in place. During the design phase the ETE model can be used to project the equipment and personnel which will be needed to assure that a certain minimum throughput can be achieved by the ILS being designed. For systems already in place the ETE model can be used, in conjunction with observed data about system performance, to assess the probable impact of changes in instructor availability, student input load, equipment inventories and so forth.

The basic technique used to achieve generality of application is to designate all student activities, whether learning or administrative, as "modules." Each of these modules is tagged with an identification code which designates the type of support required for that module. Since all parts of the ILS, excluding the students, can be thought of as resources to be used in support of the student, contention between students and the demand level for each type of resource comprise the basic content of the model. For example, a student sign-in procedure can be represented as a module which every student must complete first, and which requires the support of ancillary personnel. By following this approach, the user can simulate different administrative procedures without supplying data in a multitude of forms.

MODEL DESIGN ASSUMPTIONS. Certain assumptions were made in the design of the ETE model logic. The user should be aware of these assumptions when specifying an ILS configuration and when interpreting results.

1. When an instructor is required in support of a particular module the length of time the instructor will be occupied is, based on a uniform probability distribution, between 0 and 10% of the completion time for that module.

2. Conditional branching within a curriculum cannot be explicitly specified in a model. Conditional branching must be simulated by specifying different curricula for each possible branch and adjusting the percent of incoming students assigned to these different curricula to match the branching percentage expected.

3. Resources are always acquired by the student in a fixed order: instructional materials, team members, staff members, facilities (such as carrels) and the instructor. Consequently, the module itself will always be "in use" longest; with team, staff, etc., following in descending order. If, for example, a long queue develops for a particular facility, the average time "in use" for the facility may appear much shorter than the average time "in use" for the instructional materials.

INPUT PARAMETER DESCRIPTION

Regardless of whether a new model is to be specified or an old model updated, it is necessary for the user to understand the data items used to define an IL System. In general, inputs are required to define the learning system configuration, i.e., curricula, number of instructors, module completion times, etc., of the courses being simulated. This section is divided into two parts. The first part describes each of the required input parameters. The second part covers the method for entering input data.

REQUIRED INPUT DATA. Listed below are the parameters required to formulate an ILS model.

a. School capacity (AOB).

b. Number of student types and distribution - Student type is directly related to the curriculum to be followed by that student. Student distribution is the percent of all incoming students assigned to each type.

c. Curricula - A curriculum, which consists of the sequence of module numbers to be completed by the student, must be supplied for each student type. For example:

Student type I: Modules 1, 3, 6, 7, 9 and 11
Student type II: Modules 2, 3, 4, 5, 7, 8 and 9.

d. Instructor qualifications - Available instructors are grouped according to the modules they are qualified to teach. For example, modules 1-4 may be assigned to instructor group I, modules 5, 6 and 10 to instructor group II, etc..

e. Number of instructors - The number of instructors in each instructor group must be specified.

f. Available modules - The number of copies of the instructional matter for each module must be specified. For example, if module number 3 is a video tape cassette, the number of cassettes in the inventory is supplied here.

g. Number of students per team - If any of the modules in a course require a team of students, the number of team members is specified here.

h. Remedial modules - Where a module is designated as having remedial matter which is not self-contained, a corresponding remedial module type must be designated.

i. Number of remedial modules - The number of available remedial modules of each type must be specified in the same way as the primary modules.

j. Projected completion times - Each module, both primary and remedial, must have an estimate of time-to-complete. The time is entered, not in wall-clock time, but in model time units. Time is always entered in whole numbers and represents the number of internal time units for completion of the module. It is in the specification of time-to-complete that the user determines the relationship between internal time and wall-clock time.

For example: Assume that a given module has a projected time-to-complete of one hour. If the time-to-complete is entered as 1 then each internal clock unit will represent 1 hour. If time-to complete is entered as 2, each time unit will be 1/2 hours, if entered as 4, each time unit equals 1/4 and so on. The user must be consistent from module to module.

k. Completion spread - The completion time (item j.) for each module may be modified by a spread value. For example, if the projected time-to-complete for a given module is two hours, the factor may be modified by a spread so that completion time becomes two hours plus or minus thirty minutes. If no spread is supplied, a zero value is assumed.

l. Available facilities - Where other facilities (such as carrels or power supplies) are required for completion of a particular module, the number of available facilities must be specified.

m. Staff assignments - Personnel, other than instructors, such as clerks, computer operators, etc., are assigned to groups and the groups assigned to modules in the same fashion as instructor personnel.

Not all of these data need be specified for every ILS model generated. Some (such as at least one curriculum) are mandatory. However, the structure of the data entry program is such that the user governs which of the optional inputs will be required and prompting, which is built into the data entry program, assures that the user enters all mandatory data.

OUTPUT PARAMETER DESCRIPTION

The standard ETE output is shown in Figure III-1. Much of the output is self-explanatory, but some clarifying commentary on the following items is required.

a. Student Type - The Student Type number matches curriculum number. Student Type 1 are those students passing through curriculum number 1, etc.

b. Average Completion Time - Completion time is given in internal model time (see input parameter description). To convert to wall-clock time the user should divide the Average Completion Time by the number of internal clock units per hour used to specify the module completion times during model specification.

c. Instructor No. - Instructor numbers are assigned from 50 downward and according to instructor group. For example, if two instructor groups were specified with group 1 having 3 members and group 2 having 2 members, instructor numbers would be assigned as follows:

50 49 48	Instructor Group 1
47 46	Instructor Group 2

```
                        STUDENT STATISTICS

     STUDENT TYPE    NUMBER COMPLETING    AVG. COMPLETION TIME
          1                  3                 102
          2                 47                 64


                       INSTRUCTOR STATISTICS

 INSTRUCTOR NO.     PERCENT UTIL.    AVG. WAIT TIME   MAX. NO. WAITING
        50              .006              .000               1


                        MODULE UTILIZATION

     MODULE NO.           PERCENT USAGE    NO.USING        AVG. TIME

            1                 .068            74              5.811
            2                 .023            73              2.000
            3                 .011             5             14.000
            4                 .001             4              2.000
            5                 .007             4             12.250
            6                 .629            70             56.829


                 OTHER FACILITIES UTILIZATION

  FACILITY NUMBER       PERCENT USAGE     NO. USING         AVG. TIME

          51                .197             79              6.329
          52                .155              4             12.250
          53                .949             51              5.882
          54                .092             73              2.000


                          QUEUE DATA

  QUEUE NUMBER          MAX CONTENTS    AVG WAIT TIME.        AVG CONTENTS
          51                 1               .000                .000
          52                 1               .000                .000
          53                19             52.542          11.639
          54                 1               .000                .000
         126                 1               .000                .000

 STAFF GROUP         PERCENT UTIL.     AVG WAIT TIME      MAX NO WAITING
         126             .000              .000                 1
```

EXAMPLE OF MODEL OUTPUT
FIGURE III-1

d. Percent Utilization or Usage - Percentages are always given with 100% = 1.000. To convert the output number to a whole percent, multiply by 100.

e. Average Wait Time - Average Wait Time is given in internal clock units and is the wait time for those who waited. Students who experience no delay in obtaining instructor assistance do not appear in this average.

f. Facility Number - Facility numbers are assigned in ascending sequence starting with 51. Numbers are assigned in the order in which the groups are defined during model specification.

g. Staff Group - Staff Group numbers are assigned the same way facilities group numbers are assigned but begin with 101.

ETE MODEL OPERATIONAL PROCEDURES

This section deals with the procedures for entering new model data, updating existing models, executing the models, and reviewing model output. All of these procedures are controlled via a single, interactive executive which permits execution of appropriate branches depending on the responses of the user.

Figure III-2 is a macro view of the ETE control executive and the associated procedures which can be invoked to perform the functions enumerated above. As indicated, there are three basic operational paths: specification of a new ILS configuration (and hence, a new model), modification (update) of an existing model, and review of data output from a previous model run. Of the three possibilities, only one, the specification of a new ILS configuration, requires extensive input data. The other two modes require response to only a small number of system queries.

Generally, the steps to be followed for each new application of the ETE model will be the same. First the ILS to be simulated must be defined in terms of curricula, module support requirements, staffing, etc.. Next, these data are entered into the ETE model and a model of this particular ILS generated. After the model has been generated it can be run and the output analyzed. Analysis of the first run should provide information as to which parameters in the model should be manipulated in order to achieve desired ILS performance. The key parameters can be changed via the ETE update procedures and the model run again. The analysis-update cycle is repeated until projected system performance meets design goals. This process is illustrated under "Data Entry for a New Model" and FIREX Run Analysis."

PROCEDURE SELECTION. The controlling executive routine is invoked by entering:

```
ETE2
```

at the terminal.

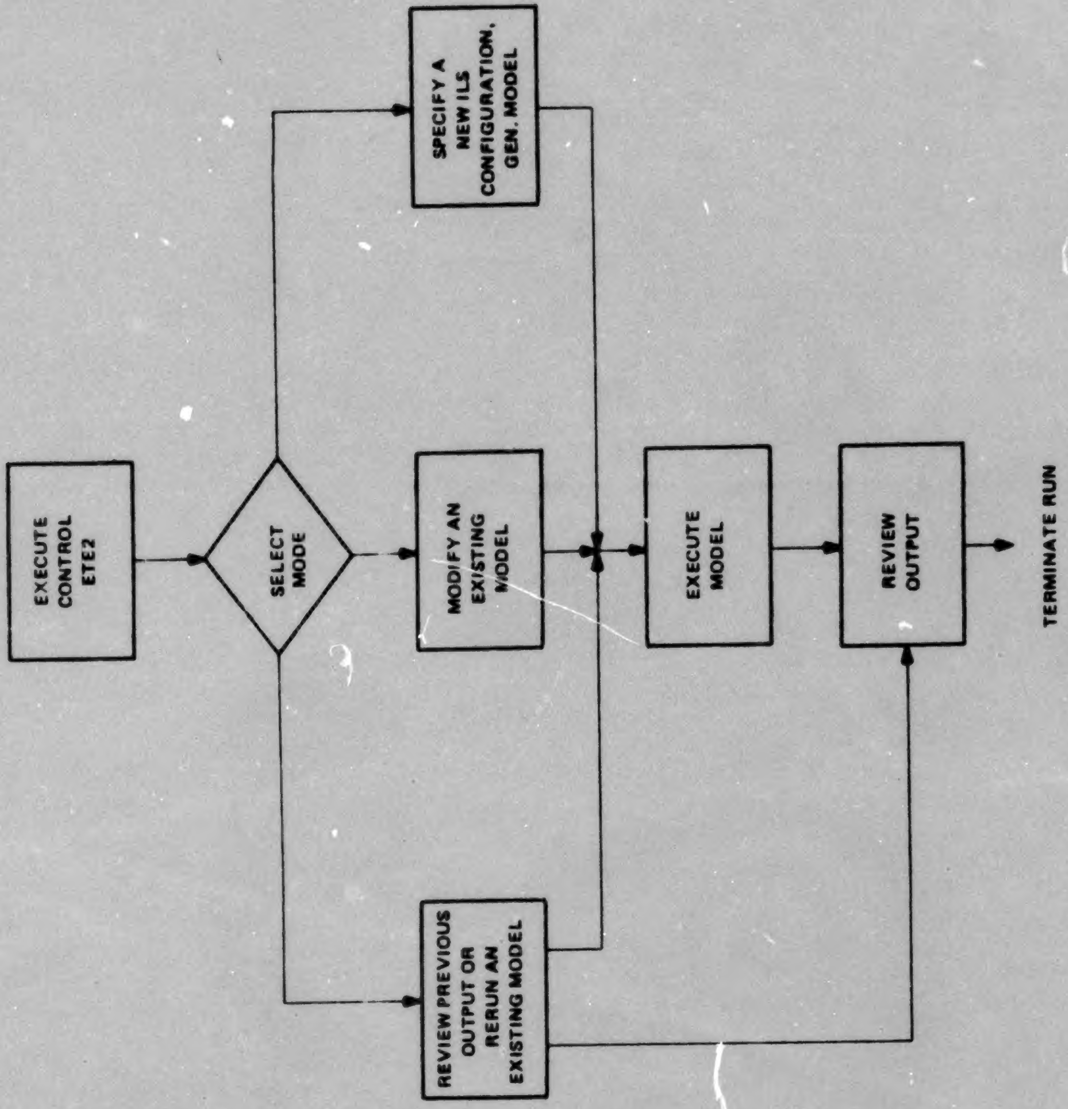

EXECUTE CONTROL ETE2
SELECT MODE
SPECIFY A NEW ILS CONFIGURATION, GEN. MODEL
MODIFY AN EXISTING MODEL
REVIEW PREVIOUS OUTPUT OR RERUN AN EXISTING MODEL
EXECUTE MODEL
REVIEW OUTPUT
TERMINATE RUN

FIGURE III-1 ETE MODEL OPERATION PROCEDURE OVERVIEW

The system responds by requesting the name of the model the operator wishes to use. Model name must be between one and seven characters in length and can be either alphabetic, numeric, or a combination.

Once the model name has been entered, the system then asks if the name entered is that of a new model. If the operator answers 'YES' to this question, the system invokes the program used to specify a complete ILS configuration and files the resulting model under the name specified earlier. Once filed, the model can be retrieved at any later time by entering its name in response to the system request for model name.

DATA ENTRY FOR A NEW MODEL. The general rules for data entry are as follows:

a. General NCSS typing conventions apply.

b. Numbers are always whole numbers with no decimal points.

c When more than one number is to be entered on a single line (such as a curriculum), numbers are always separated by commas with no embedded blanks.

Before beginning the actual data entry process, the user should first review the characteristics of the ILS to be simulated. Each module should be categorized according to the type of instructional media, whether an instructor is required, etc.. Support requirements should be grouped according to the modules with which they are associated.

It is advisable to list each module along with a brief description of module characteristics. The number of courses in the school and their curricula should be defined in advance as well as the distribution of incoming students to be assigned to each course. For some modules, in which activities require support from more than one type of facility or equipment, (but not concurrently), it may be necessary to break the module into two independent modules for simulation. For example, a module which consists of material to be studied at a wet carrel followed by a session on a trainer of some kind could not be simulated directly. It would be necessary to define two modules, one requiring the carrel and the other the trainer.

The process of the ILS characteristics review is best illustrated by an example. Assume that a school for fire extinguisher operation and repair is being designed. The school consists of six learning modules, total, broken into two courses: a repairman's course which covers all six modules and an operator's course which covers three of the six learning modules. The six modules and their support requirements are as follows:

a. Module 1: Module 1 is an introductory module in programmed instruction form. It requires no labs, no instructors, and has no special remedial material. A study carrel is required.

b. Module 2: The module itself is a 16 mm film reel. No instructor, staff, or remedial matter is required. A 16 mm projector is required.

c. Module 3: Has the same format and requirements as module 1.

d. Module 4: Is an administrative procedure for lab registration. Its only special requirement is a staff lab assistant.

e. Module 5: This module requires a fire extinguisher, a lab facility, and instructor assistance.

f. Module 6: This module requires a fire extinguisher, a practice range, and instructor assistance.

These requirements can be summed as follows:

The modules are: PI materials, a film reel, and fire extinguishers.
Instructors: 1 group having as many members as the user wishes.
Staff support: 1 group: 1 member
Facilities: 4 groups: carrels, projector, laboratory, and range,
Again, the user can assign any number to each group.

Using these data, it is now possible to step through the example and observe the procedure for entering configuration data.

Interrogation Structure. The ILs specification procedure begins at a high level of generality and moves to more and more specific queries. The questions are self-explanatory, with the exception of the set of five questions dealing with the need for data on instructors, facilities, etc. These five queries are made so the user can avoid repetitious queries concerning specifications which are of no interest to him. However, it should be noted that once a 'NO' answer is given, the system will assume that the user is not to be queried on the item in question for the remainder of the run. Therefore, if a single module requires a particular type of data (such as module 4 in the example where staff personnel are required), the question concerning that type of data should be answered 'YES'.

Additional Input Considerations. The model name is alphameric from 1 - 7 characters in length. Once input, the model name becomes the system designation for the particular model being developed. Initially, the system will generate a single file of the designated name and file-type GPSS. After the model has been executed, a single file bearing the same name but of file-type LISTING will be generated.

For multiple entry inputs such as a curricula, or completion times or spreads, the number of items entered is limited to 27 per input line. If, for example, a curriculum contains 35 steps the first 27 should be entered as a single line. After the CR is hit, the system will indicate that input is still expected. At that time the remaining 8 steps should be entered. Care should be exercised in this situation since the input record is assumed to be 27 items long and entry of less than 27 items per line (except for the last line) will result in some number of zero entries (the number of zero entries being equal to 27-n where n is the number of items actually entered in that line). Similarly, if more than 27 items are entered, the excess will be lost.

Currently there is no method for saving a partial model. If for any reason the program is not carried through all question and answer steps, the model will not be saved.

Figure III-3 is a complete copy of the model configuration procedure for the fire extinguisher school. All user responses are underlined. Once the full configuration has been specified (the last entry being the number of copies of instructional matter) the NCSS Edit program generates a number of output messages. No response on the part of the user is required and the messages have not been reproduced.

Following the model edit phase the system asks if the model is to be modified. This is the same message that appears in each ETE run if the response to the question "IS THIS A NEW MODEL?" is "NO" and is covered under model update procedures.

If update is not required, the model will then be compiled and executed. Again, the system will generate a number of messages which the user does not respond to and are not included. After the NGPSS system has completed model execution, it returns control to the ETE system, and the output selection message is displayed.

```
09.42.53 ETE2
PLEASE ENTER THE NAME OF YOUR MODEL.
FIREX
IS THIS A NEW MODEL?
YES
EXECUTION:

COURSE PROFILE DATA
HOW MANY COURSES ARE THERE?
2
ENTER SCHOOL CAPACITY (AOB)
25
WHAT PERCENT OF STUDENTS GO INTO EACH COURSE?
(ENTER PERCENTAGE AS WHOLE NUMBER)
COURSE 1?
10
COURSE 2?
90

PLEASE ANSWER THE FOLLOWING QUESTIONS: YES OR NO
WILL DATA BE NEEDED ON INSTRUCTOR UTILIZATION?
YES
WILL DATA BE NEEDED ON FACILITIES UTILIZATION?
YES
ARE SPECIAL REMEDIAL MODULES INCLUDED IN ANY COURSE?
NO
DO ANY COURSES REQUIRE STAFF MEMBERS (NOT INSTRUCTORS)?
YES
ARE ANY MODULES GROUP MODULES?
NO
```

ILS MODEL CONFIGURATION PROCEDURE

FIGURE III-3

```
HOW MANY INSTRUCTOR GROUPS ARE THERE?

1
HOW MANY INSTRUCTORS IN EACH GROUP?
GROUP 1?
2

HOW MANY FACILITIES GROUPS ARE THERE?

4
HOW MANY UNITS IN EACH FACILITY GROUP?
GROUP 1?
8
GROUP 2?
1
GROUP 3?
1
GROUP 4?
5
HOW MANY STAFF GROUPS ARE THERE?
1
HOW MANY STAFF PERSONNEL IN EACH GROUP?
GROUP 1?
1




THE FOLLOWING DATA DESCRIBES THE INDIVIDUALCOURSE MODULES
ALL ENTRIES SHOULD BE WHOLE NUMBERS
IF AN INPUT IS NOT NEEDED, ENTER A ZERO
ENTER TOTAL NUMBER OF MODULES

6
MODULE NO.  1
ENTER INSTRUCTOR GROUP NUMBER
0
IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
0
ENTER FACILITY GROUP NUMBER
1
MODULE NO.  2
ENTER INSTRUCTOR GROUP NUMBER
0
IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
0
ENTER FACILITY GROUP NUMBER
4
```

FIGURE III-3 (CONTINUED)

```
MODULE NO.  3
ENTER INSTRUCTOR GROUP NUMBER
0
IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
0
ENTER FACILITY GROUP NUMBER
1
MODULE NO.  4
ENTER INSTRUCTOR GROUP NUMBER
0
IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
1
ENTER FACILITY GROUP NUMBER
0
MODULE NO.  5
ENTER INSTRUCTOR GROUP NUMBER
1

IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
0
ENTER FACILITY GROUP NUMBER
2
MODULE NO.  6
ENTER INSTRUCTOR GROUP NUMBER
1
IF STAFF REQUIRED, ENTER STAFF GROUP NUMBER
0
ENTER FACILITY GROUP NUMBER
3




NEXT, CURRICULUM DATA IS TO BE ENTERED
FIRST, THE NUMBER OF STEPS IN THE SPECIFIED CURRICULUM
IS ENTERED, THEN MODULE NUMBERS SEPARATED BY COMMAS
FOR EXAMPLE: 1,3,4,6,7,10 ETC. UNTIL THE COMPLETE
CURRICULUM HAS BEEN SPECIFIED
CURRICULUM NO. 1
ENTER NUMBER OF STEPS IN THIS CURRICULUM

6
NOW ENTER THE CURRICULUM
1,2,3,4,5,6
CURRICULUM NO. 2
ENTER NUMBER OF STEPS IN THIS CURRICULUM
3
NOW ENTER THE CURRICULUM
1,2,6
```

FIGURE III-3 (CONTINUED)

```
NEXT, ENTER ESTIMATED COMPLETION TIMES FOR EACH MODULE
ENTRY FORMAT IS THE SAME AS FOR CURRICULUM DATA

6,2,16,2,12,6

NOW ENTER COMPLETION VARIATION TIME FOR EACH MODULE,
SAME FORMAT AS COMPLETION TIMES.
2,0,4,0,2,0

NOW ENTER THE NUMBER OF COPIES OF INSTRUCTIONAL
MATTER AVAILABLE FOR EACH MODULE
ENTRY FORMAT IS THE SAME AS FOR FACILITIES DATA.
20,20,20,20,20,20
```

VARIOUS SYSTEM MESSAGES

```
ETE EXEC READY FOR INPUTS
IS ETE INPUT TO BE MODIFIED
ENTER : YES OR NO (TO REVIEW PREVIOUS OUTPUT ENTER : SKIP)
NO
```

VARIOUS SYSTEM MESSAGES

```
!IS ETE OUTPUT TO GO OFF LINE
ENTER : OFF OR TERM
TERM
FOLLOWING ETE DATA AVAIL.
1). STUDENT STATISTICS
2). INSTRUCTOR STATISTICS
3 ). MODULE UTILIZATION
4). OTHER FACIL UTILIZ
5). ALL OUTPUT
ENTER 1,2,3,4,5
5
```

FIGURE III-3 (CONTINUED)

MODIFICATIONS TO AN EXISTING MODEL. If, in response to the system query "IS THIS A NEW MODEL?", the user answers "NO," the system then assumes that only update, review, or execution is required.

The system asks if any input parameters are to be modified or if the user wishes to review previous model output. There are three permissible responses to this question:

YES: Input parameters are to be modified.

NO: No changes, execute the model as is.

SKIP: Retrieve the output data already associated with the model name and make them available for display.

A "NO" response results in model execution. After execution is complete, the system once again queries the user as to which parts of the model output file he wishes to review. At this point, the system query/response is the same as it is when "SKIP" is entered. Figure III-2 shows that all three system paths end with the output review section.

If the operator answers "YES" to the question on input parameter modification, the system invokes the program used to modify an existing model. Figure III-4 shows a system print-out of the messages used to interrogate the operator as to which changes he wishes to make. The entries shown in response to the questions are examples only, and are not intended to represent typical responses.

Although the messages are generally self-explanatory, some points need clarification and some warnings need to be issued.

Parameter change selection is always done by entry of a single digit, 1 through 8. Of the eight possible selections, only curriculum update is a two-step process. Three types of changes are permitted; modules may be inserted into a curriculum, deleted from a curriculum, or replaced by another module number. Since, in some cases, the update program needs information, such as the position in the curriculum at which a module number is to be inserted, the operator should have a copy of all data currently in the model before updating is attempted.

WARNING. A single curriculum may not be changed by adding or deleting more than one module for each time the change program is invoked. If multiple additions or deletions (to the same curriculum) are required, they must be done one at a time.

Parameter 2, MODULE TYPE, needs clarification. The program which converts initial inputs into the model configuration condenses the information provided about each module such as instructor needed, facilities needed, etc., into code numbers. Table III-1 is a list of all possible code numbers and their definitions. When it is desired to change particular module requirements, the operator should first determine the existing code number (for example, if both instructor and facilities were required, the old code number would be a 9), then determine the new code number based on new requirements. In the example in Figure III-4, the change introduced would remove the requirement for an instructor from Module No. 3.

Page 1 of 3

```
19.50.27 ETE2
PLEASE ENTER THE NAME OF YOUR MODEL.
SAMPLE
IS THIS A NEW MODEL?
NO
ETE EXEC READY FOR INPUTS
IS ETE INPUT TO BE MODIFIED
ENTER : YES OR NO (TO REVIEW PREVIOUS OUTPUT ENTER : SKIP)
YES
MODIFY MODEL PARAMETERS
EXECUTION:
SELECT PARAMETER TO BE CHANGED
1 = CURRICULUM
2 = MODULE TYPE
3 = MODULE COMPLETION TIMES
4 = NUMBER OF INSTRUCTORS
5 = GROUP SIZES
6 = FACILITIES
7 = STUDENT INPUT RATE
8 = SCHOOL CAPACITY
1
ENTER ACTION: INSERT, REPLACE, OR DELETE
INSERT
ENTER CURRICULUM NO.
2
NEW MODULE =
5
NEW MODULE TO BE INSERTED FOLLOWING?
4
ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
1
ENTER ACTION: INSERT, REPLACE, OR DELETE
REPLACE
ENTER CURRICULUM NO.
2
NEW MODULE =
3
ENTER MOD NO. TO BE REPLACED OR DELETED
2
ANYMORE CHANGES?
YES
```

FIGURE III-4 ETE MODEL UPDATE PROCEDURE

```
SELECT PARAMETER TO BE CHANGED
1
ENTER ACTION: INSERT, REPLACE, OR DELETE
DELETE
ENTER CURRICULUM NO.
2
ENTER MOD NO. TO BE REPLACED OR DELETED
3
!ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
2
MODULE TYPE CODE CHANGE.
ENTER MODULE NUMBER
3
ENTER OLD TYPE CODE
9
ENTER NEW TYPE CODE
8
ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
3
COMPLETION TIME CHANGE
ENTER MODULE NUMBER
4
ENTER OLD COMPLETION TIME
12
ENTER NEW COMPLETION TIME
10
ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
4
CHANGE NUMBER OF INSTRUCTORS
ENTER INSTRUCTOR GROUP NUMBER
3
ENTER OLD GROUP SIZE
2
ENTER NEW GROUP SIZE
4
ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
5
CHANGE STUDENT GROUP SIZE
ENTER GROUP NUMBER
3
ENTER OLD GROUP SIZE
2
ENTER NEW GROUP SIZE
4
ANYMORE CHANGES?
YES
```

FIGURE III-4 (CONTINUED)

Page 3 of 3

```
SELECT PARAMETER TO BE CHANGED
6
CHANGE FACILITIES INVENTORY
ENTER FACILITY TYPE
3
ENTER CURRENT CAPACITY
4
ENTER NEW CAPACITY
6
!ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
7
CHANGE STUDENT INPUT RATE
NEW STUDENT EVERY ? CLOCK UNITS
4
ENTER NUMBER OF CLOCK UNITS OF VARIATION
2
ANYMORE CHANGES?
YES
SELECT PARAMETER TO BE CHANGED
8
CHANGE STUDENT CAPACITY
ENTER NEW CAPACITY
30
ANYMORE CHANGES?
NO
DO YOU WISH TO EXECUTE THE MODEL?
NO
```

FIGURE III-4 (CONTINUED)

MODULE TYPE CODE DEFINITIONS

MODULE TYPE	REQUIREMENT
1	INSTRUCTOR
2	GROUP
3	INSTRUCTOR, GROUP
4	STAFF
5	INSTRUCTOR, STAFF
6	GROUP, STAFF
7	INSTRUCTOR, GROUP, STAFF
8	FACILITIES (FACIL)
9	INSTRUCTOR, FACIL
10	GROUP, FACIL
11	INSTRUCTOR, GROUP, FACIL
12	STAFF, FACIL
13	INSTRUCTOR, STAFF, FACIL
14	GROUP, STAFF, FACIL
15	INSTRUCTOR, GROUP, STAFF, FACIL
16	REMEDIAL (REM)
17	INSTRUCTOR, REM
18	GROUP, REM
19	INSTRUCTOR, GROUP, REM
20	STAFF, REM
21	INSTRUCTOR, STAFF, REM
22	GROUP, STAFF, REM
23	INSTRUCTOR, GROUP, STAFF, REM
24	FACILITIES, REM
25	INSTRUCTOR, FACIL, REM
26	GROUP, FACIL, REM
27	INSTRUCTOR, GROUP, FACIL, REM
28	STAFF, FACIL, REM
29	INSTRUCTOR, STAFF, FACIL, REM
30	GROUP, STAFF, FACIL, REM
31	INSTRUCTOR, GROUP, STAFF, FACIL, REM

TABLE III-1

FIREX RUN ANALYSIS. Figure III-1 is the output obtained from the first run of the fire extinguisher school model called FIREX. The output was obtained by executing the model based on the parameters entered during the model specification phase (Figure III-3).

The initial version of FIREX has the following key parameter values:

1 Instructor group consisting of 2 instructors both qualified to teach the lab and range (modules 5 and 6)

1 Staff member
4 Facilities groups
  Group 1: carrels - total of 8
  Group 2: lab - total of 1
  Group 3: range - total of 1
  Group 4: projectors - total of 5

Total completion time (with no delays) 44 time units.

The first significant output is Average Completion Time. Completion time for students who covered all six modules was 102 time units versus the 44 time units minimum completion time. This indicates that there is a significant delay occurring somewhere in the IL System.

The Instructor Statistics sections shows that only one of the two instructors is used at all, and then for only .6% of available time. The delay is, therefore, not related to instructor availability.

Module utilization times for Modules 1-5 are close to the average completion times specified during model formulation. Average time for Module 6 is 57 time units versus the 6 time units specified for that module. The delay is evidently associated with this module. This is verified by reference to the Queue Data section which shows that the queue associated with Facility 53 (the test range) had an average of 12 students at all times and that these students waited for an average of 53 time units to use the range.

The simplest way to correct this problem is to increase the number of available practice ranges from 1 to 2. Figure III-5 shows the procedure for entering this change in FIREX. Note that this change was entered without leaving the ETE system. In response to this query:

```
TO RUN OR RERUN ETE ENTER YES
```

the word YES was entered and model modification was then accomplished.

Figure III-6 shows the output from this second run. Average Completion Time has dropped to 45 time units. This value is very close to the minimum possible time, and indicates that students are experiencing minimal delays within the school. Reference to the Module Utilization and Queue Data output sections verifies that there are no significant delays within the system.

At this point the course designer must analyze available resources and alternatives. The construction of a second practice range may be too expensive. Alternatives such as redesignation of Module 6 as a team module (while holding the number of practice ranges to one) may be considered.

```
EDIT:
IF THROUGH WITH ETE OUTPUT
ENTER : YES OR NO
YES




TO RUN OR RERUN ETE
ENTER : YES ELSE
ENTER : EXIT
YES
ETE EXEC READY FOR INPUTS
IS ETE INPUT TO BE MODIFIED
ENTER : YES OR NO (TO REVIEW PREVIOUS OUTPUT ENTER : SKIP)
YES
MODIFY MODEL PARAMETERS
EXECUTION:
SELECT PARAMETER TO BE CHANGED
1 = CURRICULUM
2 = MODULE TYPE
3 = MODULE COMPLETION TIMES
4 = NUMBER OF INSTRUCTORS
5 = GROUP SIZES
6 = FACILITIES
7 = STUDENT INPUT RATE
8 = SCHOOL CAPACITY
6
CHANGE FACILITIES INVENTORY
ENTER FACILITY TYPE
53
ENTER CURRENT CAPACITY
1
ENTER NEW CAPACITY
2
ANYMORE CHANGES?
NO    \
!EDIT:
       STORAGE    S51,8/S52,1/S53,1/S54,5
       STORAGE    S51,8/S52,1/S53,2/S54,5
FILING: FIREX    GPSS     P.
DO YOU WISH TO EXECUTE THE MODEL?
YES
```

FIREX CHANGE PROCEDURE

FIGURE III-5

```
                         STUDENT STATISTICS

          STUDENT TYPE    NUMBER COMPLETING   AVG. COMPLETION TIME
                1                  3               45
                2                 47               14


                        INSTRUCTOR STATISTICS

   INSTRUCTOR NO.     PERCENT UTIL.    AVG. WAIT TIME  MAX. NO. WAITING
             50            .004            .000               1


                        MODULE UTILIZATION

        MODULE NO.          PERCENT USAGE    NO.USING        AVG. TIME

                  1               .071           53            5.774
                  2               .024           52            1.981
                  3               .011            3           16.333
                  4               .001            3            2.000
                  5               .008            3           12.000
                  6               .075           51            6.333


                  OTHER FACILITIES UTILIZATION

    FACILITY NUMBER      PERCENT USAGE    NO. USING        AVG. TIME

                 51           .208           56             6.339
                 52           .169            3            12.000
                 53           .708           51             5.922
                 54           .096           52             1.981


                          QUEUE DATA

    QUEUE NUMBER         MAX CONTENTS    AVG WAIT TIME      AVG CONTENTS
              51                1              .000          .000
              52                1              .000          .000
              53                1              .411          .098
              54                1              .000          .000
             126               1              .000          .000

   STAFF GROUP        PERCENT UTIL.    AVG WAIT TIME  MAX NO WAITING
             126            .000           .000            1
```

SECOND FIREX OUTPUT

FIGURE III-6

ERROR CONDITIONS. Error conditions can occur in three general ways:

1. Catastrophic system level errors such as insufficient disk storage space.

2. Entry of data in a type of format incompatible with the program reading the data.

3. Simple entry of an incorrect number.

System level errors will not be covered here because of their highly general nature.

Incorrect data type, such as alphabetic instead of numeric, will have different effects depending upon when during the run the erroneous data are entered. The minimum response will be an indication that an invalid entry has been made and data re-entered.

If the error takes place during model specification or update, a FORTRAN error message will be written out along with the message: "STANDARD FIXUP TAKEN." The results of the standard fixup are unpredictable. Generally, the erroneous entry will be stored as a zero. The user can sometimes correct this condition by use of the model update program if the particular entry on which the error took place has been noted.

Wrong data type, when entered during the model update program, could result in an unpredictable branch to a part of the program the user does not wish to execute. When this happens it is best to re-IPL the system and start over.

Entry of an incorrect number will not always result in an obvious response during model specification runs. For this reason it is good practice to retain a copy of the specification run inputs and re-check for accuracy.

During model update it is also possible, though less likely, that erroneous entries will go unnoticed. Usually the editor will be unable to accomplish the change requested and a message: "NO CHANGE" will appear in the system output. When an erroneous curriculum number is entered a message: "NOT FOUND" will be output.

ETE OPERATIONAL TEST

Operational test for the ETE model consists of exercising the major system components: model specification, execution and update to ascertain that all are working as expected.

To perform operational test of the ETE model the user should follow this series of steps:

1. Log on the system per standard procedure.
2. Follow the steps for definition of a new model exactly as they are shown in Figure III-3.
3. Compare the output data with that shown in Figure III-1. There should be exact one for one correspondence between the output obtained from the latest run and the output shown in Figure III-1.
4. Next, follow exactly the steps shown in Figure III-5.
5. Compare the output from the second run with the data contained in Figure III-6. Again, there should be exact correspondence.

If the results obtained from these two runs agree with the results contained in the referenced figures the system can be assumed to be working properly.

If correspondence is not obtained (with the possible exception of new output parameters which may be included in newer system releases) the contractor representative should be contacted.

This operational test is designed only to determine that the system is operating as designed. No inferences should be drawn as to the accuracy of other models developed by the user.

SECTION IV

SYSTEMS CAPABILITIES/REQUIREMENTS AND RESOURCES MODEL

SCRR MODEL ARCHITECTURE

The objective of the Systems Capabilities/Requirements and Resources (SCRR) model is to provide Navy training complex officials with sufficient physical resource information (i.e., courses, instructors, classrooms, laboratories) and related analyses to:

a. Assess the feasibility of meeting annual training requirements at the training complex level.

b. Evaluate alternative plans for meeting both short- and long-term training requirements.

c. Assess the utilization of existing resources in the daily operation of the training complex.

The SCRR model will derive the data required to fulfill these objectives through the solution and subsequent sensitivity analysis of the following linear programming problem.

> Determine the maximum student throughput based on an optimal mix of course convenings which a training complex can achieve in a specified period of time, subject to either existing or projected physical resource constraints.

Specifically, a training complex official will be able to use the SCRR model to analyze the projected impact of modifications to training demand or resource availability on student throughput, course convenings, and resource utilization.

The following are presented as examples of modifications which the SCRR model will evaluate.

a. Courses can be added to or deleted from the training complex schedule.
b. Course lengths can be increased or decreased.
c. Course convening frequencies can be altered.
d. Normal course capacities can be increased or decreased.
e. Course utilization percentages can be changed.
f. Student/instructor ratios can be modified.
g. Instructors can be added or deleted.
h. Instructor qualifications can be modified.
i. Instructor availability can be increased or decreased.
j. Classroom and laboratory availabilities can be increased or decreased.

Although training system resource optimization is the primary goal of the SCRR model, the model can also be used to calculate the quantity and mix of resources required to achieve either the current or a user-specified course convening schedule. The SCRR model operating mode can be changed from optimization to calculation by executing the program FIXCONV prior to model execution.

The SCRR model interfaces only with the Scratch data base. The model user can optionally copy data for one school, several schools, or the total training complex from the Master data base into the Scratch data base. The user may also elect to modify the contents of the Scratch data base prior to executing the model. All SCRR model input is automatically generated based on the contents of the Scratch data base at the time of model execution.

All SCRR model programs are designed to be interactively executed using telecommunication terminals.

MODEL DESCRIPTION. Figure IV-1 depicts the SCRR model functional flow. The components of the functional flow can be divided into three distinct categories:

a. Data Base

b. SCRR Model

c. User Analysis.

The SCRR model input is generated based on the data contents of the Scratch data base. The Scratch data base is a temporary copy of the DOTS Master data base which the model user can alter to represent projected training requirement/resource relationships, or to answer "what if" questions without destroying the data stored in the DOTS Master data base. Although the data base is not an integral part of the SCRR model, model operation is dependent upon the data base.

The five primary components of the SCRR model are:

a. Formulate LP objective function and constraint equations.

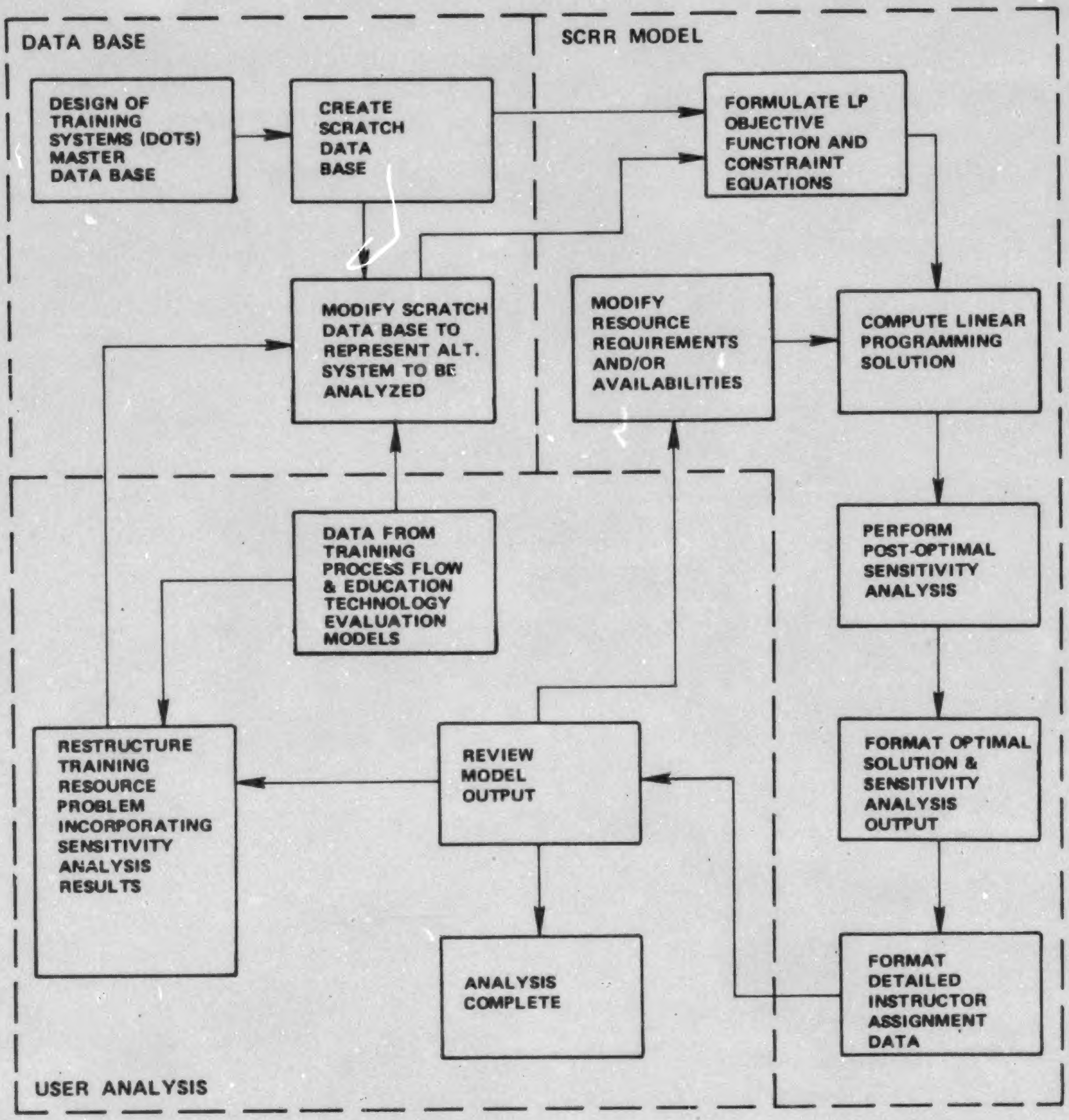
b. Compute linear programming solution.

c. Perform post-optimal sensitivity analysis.

d. Format optimal solution and sensitivity analysis output.

e. Modify resource requirements and/or availabilities.

The remaining functional flow components fall into the user analysis category. The user must analyze the optimal solution and the sensitivity analysis results to determine if that solution can be implemented. If not, then he must consider the previous results together with information from other sources, including data from the Training Process Flow (TPF) and the Educational Technology Evaluation (ETE) models, to modify the resource mix, training requirements, or other model parameters.


DATA BASE
SCRR MODEL
DESIGN OF TRAINING SYSTEMS (DOTS) MASTER DATA BASE
CREATE SCRATCH DATA BASE
FORMULATE LP OBJECTIVE FUNCTION AND CONSTRAINT EQUATIONS
MODIFY SCRATCH DATA BASE TO REPRESENT ALT. SYSTEM TO BE ANALYZED
MODIFY RESOURCE REQUIREMENTS AND/OR AVAILABILITIES
COMPUTE LINEAR PROGRAMMING SOLUTION
DATA FROM TRAINING PROCESS FLOW & EDUCATION TECHNOLOGY EVALUATION MODELS
PERFORM POST-OPTIMAL SENSITIVITY ANALYSIS
RESTRUCTURE TRAINING RESOURCE PROBLEM INCORPORATING SENSITIVITY ANALYSIS RESULTS
REVIEW MODEL OUTPUT
FORMAT OPTIMAL SOLUTION & SENSITIVITY ANALYSIS OUTPUT
ANALYSIS COMPLETE
FORMAT DETAILED INSTRUCTOR ASSIGNMENT DATA
USER ANALYSIS

SCRR MODEL FUNCTIONAL FLOW

FIGURE IV-1

Design of Training Systems (DOTS) Master Data Base. The DOTS Master data base provides a single data source for the SCRR model and significantly reduces the amount of data that must be entered each time the model is run. All input data required by the SCRR model, such as course data (length, capacity, convening frequency, instructor, classroom, lab, and equipment requirements), instructor data (qualifications, assignments, availability, rotate date), and classroom and laboratory data (location, capacity, availability, course assignments) are stored in the DOTS Master data base. The Master data base is updated as changes occur to ensure that it depicts current training requirements and the resources available to the training complex. This design feature enables the SCRR model user to obtain an analysis of current resources as applied to current training requirements. The resource analysis includes instructor, classroom, and laboratory utilization as a percentage of total availability, the total number of convenings of each course which is feasible at the current resource level, and resource trade-offs for resources which are applied across two or more courses.

A detailed description of the DOTS data base can be found in Section II of this manual.

Create Scratch Data Base. The SCRR model does not interface directly with the Master data base. The contents of the Master data base must be copied into the temporary Scratch data base before the model can be executed. Data can be selectively copied from the Master to the Scratch data base, e.g., a single school, thus providing the user with increased flexibility in model problem formulation.

Modify Scratch Data Base to Represent Alternative System to be Analyzed. If the sole source of input data for the linear programming module was the current contents of the Master data base, SCRR model application would be restricted to the analysis of the interaction of only those resources and requirements described in the data base. To extend the range of application of the model, the optional Modify Scratch Data Base component has been inserted between the Master data base module and the LP problem formulation module in the functional flow depicted in Figure IV-1.

Training complex officials have the option of creating a Scratch data base and then proceeding directly to the LP problem formulation module, thus generating an output which describes the utilization and interactions of current resource elements. However, the training official may elect to modify some or all of the existing Scratch data base contents to determine the feasibility of a proposed modification to training demand or resource availability. Modifications to the data base might be made to:

a. Incorporate data from either the TPF or the ETE models.

b. Incorporate results of previous SCRR model runs.

c. Answer "what if" questions posed by training complex, functional command, or EDTRACOM officials.

Formulate LP Objective Function and Constraint Equations. Linear programming deals with the problems arising out of the need to allocate limited resources among competing activities to meet desired objectives. These problems are characterized by the large number of solutions that satisfy the basic conditions of each problem. The selection of a particular solution as the best solution to a problem depends on some aim or overall objective that is implied in the statement of the problem. A solution that satisfies both the conditions of the problem and the given objective is termed an optimum solution. The complete mathematical statement of a linear programming problem includes a set of simultaneous linear equations or inequalities which represent the conditions of the problem, and a linear function which expresses the objective of the problem.

The linear programming term "objective function" represents the target of the linear programming solution. The answer to the problem must satisfy this requirement. The objective function must be clearly stated and expressed as a linear mathematical function. The stated objective of the SCRR linear programming model is to maximize the student throughput which a school or training complex can achieve in a specified time period subject to existing physical resource constraints. This objective can be expressed mathematically as:

$$\text{MAXIMIZE} \quad \sum_{j=1}^{J} C_j X_j$$

which is shorthand notation for saying

"MAXIMIZE $C_1X_1 + C_2X_2 + C_3X_3 + \dots + C_JX_J$".

where

X_j = number of annual convenings of course j.
C_j = average class size of course j based upon the normal class capacity and the historical course utilization percentage.

The LP problem formulation module constructs the objective function based on average class size and reformats the function to satisfy the input requirements of the LP module.

Several conditions or contraints must be considered in the formulation of the SCRR linear programming problem.

Course syllabi require a specific amount of classroom instruction time from one or more instructors for each course convening. However, only a limited number of instructors is qualified to teach each course. Therefore, the total amount of time the instructors have available for classroom instruction limits the number of times the course can be convened. The product of the classroom instruction time and the number of convenings cannot exceed the total amount of time available from all qualified instructors.

Each course syllabus also requires that classroom and/or laboratory space be available for each convening. The amount of time each facility is available also represents a limitation to the number of times a course can be convened.

In addition to the constraints imposed by instructors, classrooms, and laboratories, most courses are further restricted in that they must be convened some minimum number of times to fulfill a training requirement to train a minimum number of individuals.

These conditions can be mathematically stated by a set of simultaneous inequalities as follows:

(1) $$\sum_{j=1}^{J} a_{ij} X_j \leq TCH_i \quad i = 1, 2, \ldots I.$$

where

a_{ij} = number of instructor contact hours required by course syllabus for the ith instructor for one convening of course j.

TCH_i = total contact hours available per year for the ith instructor.

(2) $$\sum_{j=1}^{J} b_{kj} X_j \leq TLA_k \quad k = 1, 2, \ldots K.$$

where

b_{kj} = number of hours of usage required from laboratory type k for each convening of course j.

TLA_k = total hours per year which laboratory type k is available for use.

(3) $$\sum_{j=1}^{J} d_{mj} X_j \leq CRA_m \quad m = 1, 2, \ldots M.$$

where

d_{mj} = number of hours of usage required from the type m classroom for one convening of course j.

CRA_m = total hours per year the type m classroom is available for use.

(4) $X_j > MIN_j$.

where

MIN_j = minimum number of convenings per year for course j to meet a minimum training requirement.

The formulation module constructs the entire set of simultaneous inequalities described above, and reformats the constraints to conform to the input requirements of the LP module. The LP input data are compiled based solely on the contents of the Scratch data base. The model user's only responsibility is to ensure that the system to be analyzed is accurately described in the Scratch data base. Once SCRR model execution has been initiated, no further user intervention is required.

Compute Linear Programming Solution. The linear programming module accepts formatted input from the LP problem formulation module and calculates either the maximum student throughput and maximum convenings of each course possible per year subject to the expressed physical resource constraints, or the quantity of resources required to attain a specified throughput or convening schedule. Since many excellent texts which provide detailed methodology for linear programming computational procedures are available, these procedures and associated mathematical proofs will not be included in this report. An extensive linear programming bibliography can be found in Dantzig.[1]

Mathematical Programming System III Online System, MPS III/OL,[2] a product developed by Management Science Systems based on IBM's MPS/360, and adapted for interactive use by National CSS, Inc. is utilized to perform the linear programming computations. The MPS III/OL linear programming procedures use the bounded variable/product form of the inverse/revised simplex method.

Perform Post-Optimal Sensitivity Analysis. The purpose of the sensitivity analysis module is to provide information concerning the range of operations in the neighborhood of the optimum solution as calculated by the LP module. The sensitivity analysis will provide information relative to how changing instructor, classroom, or laboratory utilization affects the optimal student throughput, and the range of instructor, classroom, and laboratory utilization hours for which the solution, as originally stated, remains optimal. The sensitivity analysis will also generate information describing the effect of class size on the optimal solution as well as the feasible range of annual convenings, and the effect of changing the number of convenings on the optimal student throughput. The information obtained from the sensitivity analysis should prove to be as valuable as the specification of the optimum solution itself.

There are several reasons for performing a sensitivity analysis. Stability of the optimal solution under changes of parameters may be critical. For example, using the old optimum solution point, a slight variation in the required number of convenings or in instructor requirements may result in a large unfavorable difference in the objective function (student throughput), while a large variation in either of the parameters in another direction may result in only a small difference. The training center official may find it desirable to move away from the optimum solution when variables such as course demand, which are not considered in the SCRR model, are taken into account.

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[1] G. B. Dantzig, Linear Programming and Extensions. Princeton, N. J.: Princeton University Press, 1963.

[2] National CSS, Inc., MPS III/OL Reference Guide. NCSS Form 978, February 1974.

Instructor, classroom, laboratory requirements and availabilities, minimum convening frequencies, and class capacities are to some extent controllable, and it would be advantageous to know the effects which would result from changing the values of these parameters. Determination of the range of values for each of the parameters for which the solution remains optimum will also identify those parameters to which the optimum solution is extremely sensitive.

Format Optimal Solution and Sensitivity Analysis Output. From the operational point of view, the key component of any model is the output module. Model output represents the primary interface between the model and its user. The SCRR model output is divided into two segments:

a. LP Optimum Solution and Sensitivity Analysis - Resource Data

b. LP Optimal Solution and Sensitivity Analysis - Course Data.

LP Optimal Solution and Sensitivity Analysis - Resource Data. The LP module output and the sensitivity analysis module output have been combined into a single output format for all resource data. Instructor resources are identified by instructor name. Classrooms and laboratories are identified by building and room number. The resource data output section lists the following for each resource:

a. Annual availability.

b. Annual utilization.

c. Hours per year not utilized.

d. Percent utilization.

e. Upper and lower limits of resource utilization hours.

f. Student throughput change per unit resource change.

g. Identification of variable which limits utilization range, and whose value will change as the resource level is modified.

LP Optimal Solution and Sensitivity Analysis - Course Data. As with the resource data, the output from both the LP module and the sensitivity analysis module is presented in a single report format for course data. Courses are identified by CDP numbers. The course data section lists the following for each course:

a. Maximum number of annual convenings.

b. Current number of scheduled convenings.

c. Average class size.

d. Range of annual convenings.

e. Student throughput change per course convening change.

f. Range of class sizes to which indicated solution can be applied.

g. Identification of variable which limits convenings range, and whose value will change as the convening level is modified.

Format Detailed Instructor Assignment Data. The LP resource data output shows total annual instructor requirements for each instructor. The instructor assignments listing provides the model user with a detailed breakdown of the total contact hour requirements. The instructor assignment listing contains the following information for each instructor:

a. Course CDP Number for each course contributing to the total contact hour requirement.

b. Average class size.

c. Number of convenings per year.

d. Number of contact hours per course convening.

e. Total annual contact hours required per course.

f. Total annual contact hour requirement per instructor.

g. Total annual availability per instructor.

Review Model Output. After the training complex official has analyzed the linear programming optimal solution and the output from the sensitivity analysis, he is finally in a position to interpret and evaluate the model results. To successfully interpret the model results, the official must be familiar with the mathematical formulation of the linear programming problem. The objective of this familiarization requirement is not to understand the internal mathematical manipulations required to achieve the linear programming solution, but to be aware of simplifications and deviations from reality that were, of necessity, built into the initial linear programming formulations. Model results must be interpreted taking all assumptions and simplifications fully into consideration.

Assuming that the official either accepts the model results or modifies the model output, based on his experience and intuitive feeling for the situation being analyzed, his next task is to evaluate the results in terms of implementation feasibility. If, because of some physical, monetary, or political restriction, full or partial implementation is not feasible, the problem statement must be reformulated utilizing any new data or insights resulting from the initial problem solution and sensitivity analysis.

Upon completion of the model output review, the model user may decide that:

a. All alternatives have been evaluated and the analysis is complete.

b. The original problem should be restructured incorporating results from the current model run.

c. A parametric study of resource requirement factors should be performed.

Modify Resource Requirements and/or Availabilities. Assuming that the basic training system structure (number of courses, instructor assignments and qualifications, student/instructor ratios, etc.) described in the Scratch data base is feasible, the model user may elect to perform a parametric analysis of the resource requirement and availability variables, to investigate resource tradeoffs. A parametric analysis is a systematic study of changes in resource parameter values in the linear programming model. Resource parameters capable of being modified using model-related programs as opposed to modifying the Scratch data base are course utilization, class capacity, course length, and resource availability.

Restructure Training Resource Problem Incorporating Sensitivity Analysis Results. When review of SCRR model output indicates that the basic training resource data contained in the Scratch data base must be restructured to find a feasible solution, the training complex official must decide how to modify the current system structure This restructuring could take the form of transferring instructors between schools, implementing instructor cross-training programs, or modifying course convening schedules, for example. The system restructure module (See Figure IV-1) completes the iterative cycle. Based on SCRR model results, experience, and intuition, an official has the ability to modify initial problem statements or to develop new potential alternative solutions to be evaluated. At this point, the official need only remodify the Scratch data base to initiate an additional cycle of the iterative process.

Data From Training Process Flow and Education Technology Evaluation Models. The results of the TPF and the ETE models may suggest modifications to several of the SCRR model variables; e.g.:

a. Several courses should be individualized, reducing instructor requirements and calling for modifications to classroom and laboratory space requirements.

b. Student/instructor ratios should be increased for the lab sessions in several courses to reduce failure rates.

c. Convening frequencies should be increased to reduce the wait time required to attend several courses.

d. Convening frequencies should be reduced for low utilization courses.

The Scratch data base can be modified to reflect changes such as those listed above prior to initiating the SCRR model.

MODEL ASSUMPTIONS. A mathematical model of a system is a collection of mathematical relationships which characterize the feasible solutions of the system. By feasible solutions, is meant those solutions which can be carried out under the system's limitations. The technique utilized to solve the SCRR mathematical model is linear programming. Linear programming establishes the optimal system solution by iteratively evaluating feasible solutions against an expressed objective. Before the linear programming technique can be used, several basic requirements must be fulfilled. This section will discuss these basic requirements and demonstrate that these requirements are fulfilled by the SCRR model application. Also included in this section is a discussion of the real world interpretation of a linear programming optimal solution. Assumptions and limitations relative to the SCRR mathematical model variables are also discussed.

Linear Programming Basic Requirements. As the name "linear programming" implies, both the objective function and every constraint function must be linear. Linearity is a primary requirement of linear programming. A linear relationship is essentially defined by two properties, proportionality and additivity. In addition to these two major characteristics, three additional requirements must be adhered to: nonnegativity; divisibility; and deterministic coefficients.

Proportionality. Linearity requires a proportionality or a simple multiplicative relationship between the units of resource requirements and the number of convenings of each course. For example, if six instructor 1 contact hours are required to convene course A one time, then 12 hours are required for two convenings, and 24 hours are required for four convenings, etc. The amount of resource required is the same for the n-th convening as it is for the first. This is an important property of linearity from the practical point of view. If, for example, it was the case for some instructional curriculum that 60 hours of a given resource were required to attain 30 convenings of some course, but only 100 hours of the resource were required to attain 60 convenings of this course, then the proportionality assumption would not hold. It is obvious, without explanation, that for the SCRR model application, the resource requirements are proportional to the number of course convenings and to the student throughput for a constant class size. The objective function of the current SCRR model formulation is to maximize student throughput based on specified course capacities. Course requirements are calculated based on the same course capacities.

Additivity. The additivity property of linear relationships states that the measures of effect as calculated through the objective function, and the levels of resources as expressed in the constraint equations, must both be additive. The objective function measure of effect is student throughput, which is calculated by multiplying the course capacity by the number of convenings. Thus, if course A's capacity is 6 and it is convened 10 times each year, the annual throughput for A is 60, and if course B has a capacity of 20 and is convened 15 times per year, its throughput is 300. The additivity property states that the total throughput for the two courses is then 360. A similar example will demonstrate the additivity property's involvement in the constraints of the linear programming model. Instructor 1 teaches both courses A and B. Twenty-five hours of his time are required for each convening of course B. Since A meets ten times each year and B fifteen times, instructor 1's total requirement is 400 hours (250 for A and 150 for B). Like the above example, all SCRR model resource requirements are additive across all courses.

Nonnegativity. The nonnegativity property states that while any positive multiple of course convenings is possible, negative course convenings are not possible. Adherence to this restriction is ensured through the MPSIII/OL program. The MPSIII/OL program allows the user to specify both upper and lower bounds for the decision variables. If a lower bound is not specified, the program assumes a value of zero. Unspecified upper bounds are set equal to infinity. In the case of the SCRR model application, the LP problem formulation algorithm sets the lower bound for course convenings equal to the number of annual convenings (which is always a positive quantity) stored in the data base. A negative number of course convenings is meaningless.

Divisibility. The divisibility property requires that fractional levels of the decision variables be permissable. In many linear programming models, the decision variables would have physical significance only if they have integer values. There is no guarantee that the solution procedure utilized within the SCRR model will yield an integer solution. If an integer solution is required, the common procedure is to round the non-integer optimal solution down to the nearest integer. This course of action could produce two problems. First, this integer solution need not be feasible. Second, even if it is feasible, this solution need not be too near optimality. Since fractional values for the number of course convenings is interpretable, the SCRR model application fulfills the divisibility property requirement. A fractional course convening is interpreted as a course which is convened but is not completed in a calendar year. For example, 0.5 convenings could be associated with a two week course which is convened the last week of a calendar year.

Deterministic Coefficients. All of the coefficients in a linear programming model are assumed to be known constants. In the SCRR model application, this includes class capacities, instructor and space requirements per convening, and instructor and space availabilities. The fact that any or all of the LP coefficients may not be known constants does not invalidate model results, but does require the expenditure of additional effort. (A sensitivity analysis is generally performed to determine the effect on the optimal solution if particular parameters take on other possible values.) Sensitivity analysis is employed to determine the effect of changing the value of a single parameter. It is often of interest to investigate making simultaneous changes in a number of parameters and to study what happens as the magnitude of these simultaneous changes increase. A systematic study of such changes in certain parameters of a linear programming model is the objective of parametric linear programming. A post optimal sensitivity analysis is built into the SCRR model. Sensitivity analysis results are included in the SCRR model output. Parametric programming may be performed by the model user by systematically varying the parameters of interest, rerunning the SCRR model, and comparing results.

Interpretation of LP Optimal Solution. The SCRR model can be operated in two different modes. The number of course convenings can be specified by the user. The model will then calculate the resources required to achieve that number of convenings, and compare the required resources with present resource capabilities. On the other hand, the SCRR model could be run against the data base which depicts current resource capabilities and specifies a minimum number of course convenings. The model will determine the maximum student throughput which could be attained with current resources. Model results from the former operating mode are straight-forward and require no additional explanation. Interpretation of model results in the latter case is more complex.

Consider the following example. Course A is currently scheduled to convene 24 times per year. The SCRR model is run to optimize throughput based on current resources. Model results indicate that course A should be convened 93.7 times per year. Since the user is aware that course A utilization is currently averaging about 70 percent and a reduction in convening frequency is being considered, the model results appear absurd. However, the objective of the SCRR model was to maximize throughput, which is defined as course capacity times the number of convenings, subject to current resource capabilities. Throughput can be increased only by increasing convening frequency. Convening frequency is limited only by available resources. Capability to increase convening frequency to nearly four times the current schedule implies that present course A resources are being utilized approximately 25 percent of the available time. Therefore, the question the SCRR model user should be considering is not should course A be convened 93 times per year, but how can course A resources be utilized more effectively? Resource availabilities stored in the data base should be examined. Perhaps the original availability estimate was too high. Frequent curricula updates may reduce the time available for classroom instruction. Or the instructor(s) could be cross-trained to instruct one or more additional courses. The same model output which indicated 93.7 convenings for course A, may also have pointed out other courses which could not meet minimum convening requirements because of lack of resources.

The user should investigate all the above possibilities. Model input parameters could be modified and the model rerun to assist in the evaluation of the feasible alternatives.

Assumptions and Limitations of SCRR Model Variables. The laboratory and classroom facilities; i.e., the number of spaces available for course presentation. Lab equipment, training aids, and other major equipment installed in these spaces, are considered to be fixed in their availability in the short run (up to two years), but variable over longer time spans. Therefore, a time lag of from one to two years is assumed between a decision to procure major equipment or to construct classroom or lab facilities, and the completion of the installation or construction.

Although short-range availability of classrooms and laboratories is considered fixed, an estimate of the availability of individual classrooms or labs has not been attempted. A uniform availability of 40 hours per week for 52 weeks per year or a total of 2080 hours per year has been assumed for all classroom and laboratory spaces. The SCRR model user has three options relative to space availability: (1) maintain the assumption of a uniform 2080 hours per year availability; (2) establish the availability on a room by room basis for the training complex; or (3) utilize the SCRR model to perform parametric studies to determine the effect of facility availability.

The authorized allowance of instructors is considered to be fixed in the short run. The actual on-board count of instructors is considered variable in both the short and the long run. In the short run, variations in the on-board count may be caused by many factors (temporary additional duty, vacations, illness, time lag between assignment rotation and receipt of replacement). In the long run, higher authorities can change the instructor allowance as a function of major changes in curriculum or requirements, changes in command mission, or the general level of manpower authorizations.

On-board instructor count can be easily maintained within the data base. However, given on-board count, the key SCRR model variable becomes instructor availability. Instructor availability is the number of hours per year an instructor has available for classroom instruction. Availability does not include supervisory requirements, military duties, preparation for instruction, duties related to instruction, annual leave, illness, special training, or break-in time. Annual instructor availability is projected based on actual recorded classroom instruction time. This projection assumes that all instructor activities will be performed in the same ratio throughout the year. However, time expended on several activities such as curriculum development, preparation for instruction, and instructor training due to low student load, will fluctuate over a wide range during any one year. Actual classroom instruction time, on the other hand, is nearly uniform over the course of a year. Therefore, the current technique for projecting instructor availability will produce conservative estimates of annual availability.

It is assumed that budget does not constrain the SCRR model solution in the short run. However, in the long run, budget constraints of a capital nature may alter the SCRR optimal solution, in that student throughput could be affected by the funding available for new construction and/or procurement of new equipment.

Course curricula are considered fairly inelastic in the short run. Drastic curriculum changes require a considerable amount of time to determine new requirements, develop new material, and secure headquarters review and approval. However, numerous minor changes to courses take place frequently, and a course may be dropped as a result of sustained low utilization.

Student/instructor ratios are generally a function of curriculum requirements. The generally accepted rule used in the establishment of these ratios is that the ratio of trainees per instructor for each instructional situation should be set at that point which yields the highest possible ratio without serious detriment to the quality of instruction.

The optimum ratio should be based on consideration of the type of equipment, safety, and teaching effectiveness for the particular teaching situation. Since no more specific procedures other than the above exist, the establishment of student/instructor ratios remains highly subjective, and should be closely monitored by training complex officials.

The SCRR model calculates all instructor requirements based on historical course utilization. Calculated instructor requirements will be accurate for courses with relatively uniform utilization. Requirements for courses with increasing, decreasing, or widely fluctuating utilization will be either higher or lower than actual instructor requirements.

INPUT PARAMETERS DESCRIPTION

SCRR model input parameters contained in the DOTS Master data base are described below.

a. CDP Number - The CDP number is a four position alphanumeric field used by NITRAS as a course identifier. Each course is assigned a unique CDP number. All data elements contained in the Course and Facilities files are keyed to the CDP number.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	2	CDP	2	A	4
INST	3	CDP	10	A	4
FACIL	2	CDP	2	A	4

b. Course delete flag - The delete flag is set to one (1) for all active courses. A value of zero (0) indicates that the course has been disestablished.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	3	DEL	3	A	1

c. Number of convenings per year - The number of times each course is scheduled to convene over the next twelve months. Course schedules are based on course capacities and projected training requirements.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	3	CONV1	6	I	3

d. Class capacity - The planned maximum number of students that can attend any one convening of the course. Capacities are based upon training considerations, such as instructor to student ration, availability of training equipment, workshop, laboratories, and mock-up facilities, as well as physical considerations such as classroom size.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	3	CAP1	8	I	3

e. Course utilization - The ratio of the total number of students enrolled in the course over a one year period to the annual class capacity.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	3	UCAP	38	I	3

f. Student/Instructor ratio - A numerical index describing the number of trainees per instructor.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	4	SIR	46	F	4.1

g. Contact hours - The number of instructional contact hours taught at a given ratio of trainees per instructor. A contact hour represents sixty minutes of instruction. This refers to clock hours of curriculum time devoted to actual instruction, exclusive of breaks, administrative time, lunch, medical, dental, etc.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	4	CHRS	47	F	5.1

h. Instructor ID - The social security number is used as a unique instructor identification number to facilitate data manipulation.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	5	ID	49	A	9
INST	1	ID	1	A	9

i. Current assignment - A value of one (1) denotes that an instructor is currently assigned to a particular course. An instructor may be assigned to more than one course in situations where course lengths are less than convening frequency. Thus an instructor assigned to a one week course which is convened the first week of every month, could also be assigned to another one week course which is convened the third week of every month.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	5	ASN	51	I	1

j. Instructor name - Instructors are identified by the last name in addition to their social security number.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
COURSE	6 (Virtual)	NME	52	A	16
INST	2	NME	2	A	16

k. Instructor time utilization load date - Week-ending date (YYMMDD) of last instructor time utilization entry.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
INST	3	LDTE	13	I	6

l. Instructor time utilization category - Instructors are required to document time utilization per CNTECHTRAINST 1540.8A. Time is allocated by course on a weekly basis against the following fourteen categories.

A1 - Hours in Contact with Students
A2 - Breaks Between Classes
A3 - Curriculum Development/Task Analysis
A4 - Equipment/Training Aid Maintenance
A5 - Preparation for Instruction and Related Duties
A6 - Military/Physical Training/Other
A7 - Supervision/Administration
B1 - Annual Leave
B2 - Special Liberty
B3 - Sick Leave
B4 - Factory Training
B5 - Formal Instructor/Supervisor School
B6 - In-service Instructor Training ("break-in" time)
B6a- In-service Instructor Training Due to Low Student Load.

Category names are stored in the data base by the indicated codes; e.g., A1, A2, etc.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
INST	4	TT	14	A	3

m. Year-to-date instructor utilization hours - Instructor hours are entered into the Instructor file by instructor by course and by category on a weekly basis. Weekly entries are accumulated for a period of one year in the year-to-date field. The contents of the year-to-date field at any specific week represent total hours accumulated from the first day of the current fiscal year through that week.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
INST	4	YTD	17	F	6.1

n. Building - The name or number of the building in which a classroom or laboratory space is located.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
FACIL	3	BLDG	3	A	5

o. Room number - The name or number of a classroom or a laboratory space.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
FACIL	3	RM	4	A	3

p. Required hours - Required hours represent the number of hours the indicated space is required to convene one session of the referenced course.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
FACIL	3	REQHRS	7	F	6.1

q. Facility available hours - The number of hours, on an annual basis, the space is available for instructional purposes.

DATA BASE REFERENCE:

FILE	LEVEL	FIELD NAME	FIELD NUMBER	TYPE	LENGTH
FACIL	3	AVHRS	8	I	5

OUTPUT PARAMETERS DESCRIPTION

The SCRR model utilizes a linear programming technique to optimize student throughput, subject to limitations of resources required to convene training courses. One of the model output parameters, number of course convenings, provides the basis for the student throughput calculation. The levels of resources required to achieve the optimal student throughput are the only other model output parameters. One section of model output dealing with the LP optimal solution and the sensitivity analysis results is devoted to each type of parameter. The Instructor Assignment Listing is generated to provide the model user with a detailed allocation of the total instructor contact hour requirement. As the name implies, the listing depicts course assignments for each instructor. Contact hour requirements are detailed for each course assignment. Both the course and resource parameters will be described through an explanation of the three SCRR model output listings:

a. Instructor Assignment Listing

b. LP Optimal Solution and Sensitivity Analysis - Resource Data

c. LP Optimal Solution and Sensitivity Analysis - Course Data.

INSTRUCTOR ASSIGNMENT LISTING. A sample printout of the Instructor Assignment listing is presented in Figure IV-2. The listing identifies all courses taught by each instructor. For example, Brooks teaches both 510G and 536K, while Dorsey teaches only 536K. The assignment listing also shows the average class size, the current number of course convenings scheduled, the contact-hour requirement per convening for each instructor, and the total annual contact-hour requirement based on the current number of convenings. For example, course 510G is currently scheduled to convene 6 times this year. The average class size, based on class capacity and historical course utilization, is 7 students. Based on an average class size of 7 students, instructor Brooks is required an average of 20 hours per convening or a total of 120 hours per year for course 510G.

From Figure IV-2, both Paul and Ward also teach course 510G. Both Paul and Ward are required an average of 20 contact hours per 510G convening. The total 510G instructor requirement per convening is 60 hours. If 510G were a two week course (30 hours per week), Brooks, Paul and Ward could alternate teaching the course, each instructor teaching the course 2 times during the year. If 510G were a one week course which required two instructors per convening (60 contact hours per week), each of the three instructors could assist in teaching the course 4 times during the year. In both of the above examples, each of the three instructors taught 510G a total of 120 hours during the year, or an average of 20 hours per convening.

The Instructor Assignment Listing also sums the annual course contact-hour requirements and shows the projected annual availability for each instructor.

LP OPTIMAL SOLUTION AND SENSITIVITY ANALYSIS - RESOURCE DATA. The linear programming module calculates the number of course convenings required to maximize student throughput. This portion of the SCRR model output specifies the level of resources required to attain the optimal number of course convenings. The

```
INSTRUCTOR     COURSE    CLASIZE    CONV    HRS/CONV    TOT HRS    AVAIL HRS
-----------    ------    -------    ----    --------    -------    ---------
BROOKS          510G         7         6       20.0      120.0
                536K        10        50        9.3      465.0
                                                         ------
                                               TOT =     585.0        1042

BROWN           510V         7        12       30.0      360.0
                536K        10        50        9.3      465.0
                                                         ------
                                               TOT =     825.0        1041

DORSEY          536K        10        50        9.3      465.0        1042

HARRISON        510W         3        24       18.0      432.0        1042

HUNT            461V         2        12       42.0      504.0        1042

OBERLE          5698        14         6      130.0      780.0        1002

PAUL            510G         7         6       20.0      120.0
                536P         7        12       24.0      288.0
                                                         ------
                                               TOT =     408.0        1042

ROHLFING        5107         8        24       20.0      480.0        1042

SPARKES         5107         8        24       20.0      480.0        1042

STEWART         5107         8        24       20.0      480.0        1042

STREIT          5107         8        24       20.0      480.0        1042

WAGNER          5698        14         6      130.0      780.0        1042

WARD            510G         7         6       20.0      120.0
                536P         7        12       24.0      288.0
                                                         ------
                                               TOT =     408.0        1042
```

INSTRUCTOR ASSIGNMENT LISTING

FIGURE IV-2

utput specifies the levels to which each individual resource can increase and decrease before it is required to rerun the SCRR model. Also identified is the incremental student throughput change per unit increase or decrease up to those levels. This output assumes that the rest of the problem is unaltered; that is, the remaining input data are left constant, and the solution is adjusted as necessary to maintain feasibility and optimality.

Resource. An example of the LP Optimal Solution and Sensitivity Analysis - Resource Data output is shown in Figure IV-3. The first column identifies the resources required by all courses included in the model run. Instructors are identified by the first eight letters of their last name. Facilities are identified by building and room number.

Annual Availability. Column two in Figure IV-3 denotes the number of hours per year each resource is available to fulfill the specified course convening requirements.

Instructor Availability. Instructor contact hour availability is calculated based on the number of hours the instructor has spent in contact with students during the current year. Actual contact hours are recorded weekly by each instructor and are stored in the RAMIS instructor file by course CDP number. Year-to-date recorded contact hours are summed for all courses by instructor. Since the year-to-date total does not represent an annual total, an equivalent annual total is derived by multiplying the year-to-date total by the appropriate factor. The factor is determined by dividing the number of weeks included in the year-to-date total into 52. For example, if instructor A has recorded 200 contact hours against course 1 and 300 contact hours against course 2 over a 26 week period, the year-to-date total recorded contact hours is 500. The 500 hours is multiplied by the adjustment factor 2.0 (52 ÷ 26) to obtain an equivalent annual contact hour expenditure of 1000 hours. The instructor contact hour availability (Figure IV-3, Column 2) is set equal to the equivalent annual contact hour expenditure.

Several assumptions must be made to determine instructor availability. First, to project an annual availability based on actual recorded data covering less than a full year, linearity must be assumed. For example, if instructor A has recorded 100 contact hours over a 5 week period, the annual projection of 1000 hours assumes that instructor A will continue to be in contact with students at the rate of 20 hours per week for the remaining 45 weeks of the year (assumes instructors are available 50 weeks per year).

Projecting availability based on actual recorded contact hours also assumes that all recorded non-contact hour activity will be performed at the same constant rate during the remainder of the year. Non-contact-hour activity includes the following:

Breaks Between Classes
Curriculum Development/Task Analysis
Equipment/Training Aid Maintenance
Preparation for Instruction and Related Duties
Military/Physical Training/Other
Supervision/Administration
Annual Leave
Special Liberty

RESOURCE	ANNUAL AVAIL. (HRS)	ANNUAL UTIL. (HRS)	HOURS UNDER UTILIZED	PERCENT UTIL.	RESOURCE UTIL. RANGE MINIMUM MAXIMUM	THROUGHPUT CHANGE PER UNIT RESOURCES CHANGE	LIMITING VARIABLE
BROOKS	1042	1042	0	100	935.0	-0.154	461V
					1204.0	0.154	HUNT
BROWN	1041	1041	0	100	879.0	-0.922	HUNT
					1148.0	0.922	461V
DORSEY	1042	681	361	65	519.0	-0.688	510V
					681.0	NO CHG	
HARRISON	1042	1042	0	100	432.0	-0.167	510W
					3120.0	0.167	FLTLNHGR
HUNT	1042	718	324	68	504.0	-0.048	N-30180
					1504.0	-0.098	WARD
OBERLE	1002	1002	0	100	780.0	-0.108	5698
					1042.0	0.108	WAGNER
PAUL	1042	1042	0	100	880.0	-0.196	WARD
					1042.0	NO CHG	
ROHLFING	1042	1040	2	99	480.0	-0.400	N-19A120
					1040.0	NO CHG	
SPARKES	1042	1040	2	99	480.0	-0.400	N-19A120
					1040.0	NO CHG	
STEWART	1042	1040	2	99	480.0	-0.400	N-19A120
					1040.0	NO CHG	
STREIT	1042	1040	2	99	480.0	-0.400	N-19A120
					1040.0	NO CHG	
WAGNER	1042	1002	40	96	780.0	-0.108	OBERLE
					1002.0	NO CHG	
WARD	1042	1042	0	100	880.0	-0.196	HUNT
					1042.0	0.196	PAUL
FLTLNHGR	2080	695	1385	33	288.0	-0.250	HARRISON
					694.7	NO CHG	
N-19A120	2080	2080	0	100	960.0	-0.200	5107
					2084.0	0.200	STREIT
N-19A122	2080	1040	1040	50	480.0	-0.400	N-19A120
					1040.0	NO CHG	
N-30106	2080	596	1484	28	419.1	-0.093	BROOKS
					862.9	-0.417	510V
N-30107	2080	1335	745	64	1190.7	-0.114	BROOKS
					1553.9	-0.510	510V
N-30108	2080	308	1772	14	240.0	-0.350	OBERLE
					308.3	NO CHG	
N-30167	2080	1465	615	70	1116.1	-0.320	510V
					1464.5	NO CHG	
N-30180	2080	2080	0	100	1866.0	-0.048	461V
					2404.0	0.048	HUNT
N-30181	2080	707	1373	34	504.0	-0.500	HARRISON
					869.3	-0.688	510V

LP OPTIMAL SOLUTION AND SENSITIVITY ANALYSIS - RESOURCE DATA

FIGURE IV-3

Sick Leave
Factory Training
Formal Instructor/Supervisor School
In-service Instructor Training ("break-in" time)
In-service Instructor Training Due to Low Student Load

The model user should be aware of these assumptions and should revise availability either upward or downward based on additional information which is not reflected in the straight-line projections. For example, instructor B has been involved in curriculum development an average of 20 hours per week for a 6 month period. During that time period he has instructed in the classroom an average of 10 hours per week. The annual availability projection for instructor B would be 500 hours. However, the model user is aware that the curriculum development task is nearing completion and that instructor B will soon be available for classroom instruction 30 hours per week. Instructor B availability should be modified to reflect this information. Thus a more realistic availability might be 1500 hours per year (30 hours/week X 50 weeks).

Facility Availability. Facility availability is stored as a constant in the RAMIS facility file. Current data for all classrooms and laboratories reflect 40 hours per week for 52 weeks or 2080 hours. This figure should be modified by the model user to reflect additional information relative to a specific facility. For example, a trainer may require preventive maintenance to be performed one day every week, reducing its availability to 32 hours per week, or 1664 hours per year.

Annual Utilization. The annual utilization (Column 3) identifies the total number of hours per year each resource is required to achieve the optimal number of course convenings.

Hours Underutilized. Hours underutilized (Column 4) or resource slack time represents the difference between annual availability and annual utilization.

Percent Utilization. Percent utilization (Column 5) is the ratio of utilization to availability.

Resource Utilization Range. The resource utilization range (Column 6) indicates the level to which each resource may be increased or decreased without rerunning the SCRR model. Changes in resource level beyond this range will necessitate modifying the data base to reflect the new resource levels, and rerunning the SCRR model. Resource utilization changes within the specified range will affect the value of the optimal solution which is stated in terms of optimal student throughput. The magnitude of this effect (either positive or negative) is indicated by the next column, throughput change per unit resource change.

An example will illustrate the above explanation. Instructor Hunt (from Figure IV-3) utilization range (Column 6) is 504-1504 hours. Hunt's optimum utilization level (the level which maximizes school student throughput) is 718 hours. If Hunt's availability were to decrease below 504 hours, the indicated optimal solution would change. From the Instructor Assignment Listing (Figure IV-2), it is seen that Hunt instructs course 461V. Since minimum instructor requirements for course 461V are 504 hours (42 hours per convening X 12 convenings per year), a decrease below 504 hours would result in an infeasible solution. Also, Hunt's utilization cannot be extended beyond 1504 hours without changing the optimal solution.

The resource utilization range denotes mathematical feasibility only. Physical limitations are not considered in the LP sensitivity analysis output. Thus the maximum instructor utilization cannot physically exceed 2000 hours (40 hours per week X 50 weeks per year), even though the top end of the utilization range shown in column 6 may be greater.

A utilization decrease in the range 504-718 would decrease the indicated optimum student throughput by 0.048 (Figure IV-3, Column 7) for each hour of decreased utilization. On the other hand, should utilization be increased beyond the 718 hour level, the optimal student throughput would decrease by 0.098 per hour of increased utilization. This relationship between instructor utilization and student throughput will be examined in detail in the following sections.

Throughput Change Per Unit Resource Change. This (Column 7) identifies the change in the optimal student throughput which will result from a one hour change in resource utilization. As long as the resource utilization level remains within the indicated utilization range, the SCRR model need not be rerun. The effect of the resource change can be determined by a simple calculation using the throughput change per unit resource change.

The sensitivity analysis output, in particular the throughput change per unit resource change column, assumes a continuous relationship between the parameter representing the course convenings and the resource requirements parameter. For example, if 10 contact hours are required to convene a course one time, it is assumed that 11 contact hours will result in 1.1 course convenings, 15.5 contact hours will net 1.55 convenings, and 20 contact hours will provide 2 course convenings. Since all convenings are stated in terms of convenings per year, it is possible to interpret a fractional convening as a course which convenes prior to the end of the year but does not conclude until the following year; e.g., 0.5 convenings indicate that a course is one-half complete at the end of the year. However, except for this year-end interpretation, fractional convenings have no meaning in the real world. Once a course is convened, it is always completed. Therefore, in reality, the convening resource relationship, although linear, is not continuous. It is important that the model user keep this fact in mind when interpreting the sensitivity analysis output.

Another example from the LP Optimal Solution and Sensitivity Analysis - Resource Data output (Figure IV-3) will be used to demonstrate the significance of the throughput change per unit resource change. Instructor Hunt's utilization range is indicated to be 504-1504 hours. Hunt's annual availability is equal to 1042 hours. If Hunt's utilization were to decrease from 718 hours, the SCRR model would not have to be rerun since it can be seen from the throughput change value (Column 7) that student throughput will decrease by 0.048 for each hour of decreased instructor utilization. However, since in reality, instructor resources are not applied or reduced on an hour by hour basis, the time consequence of the above statements will be examined. A review of Figure IV-2 indicates that Hunt instructs Course 461V. Forty-two (42) contact hours are required for each 461V convening. Therefore, the instructor resource will be used in 42 hour increments. A 42 hour decrease in Hunt's utilization will decrease total student throughput by 2.0 (0.048 per hour X 42 hours). This is a logical result. Removing one 461V convening from the schedule will reduce total student throughput by 2 students, since the average class size for 461V is 2 students (Figure IV-2, Column 3).

However, a 42 hour increase in Hunt's utilization will decrease total student throughput by 4.1 students. The addition of one 461V convening would be expected to increase student throughput by 2 students, which is course 461V average class size. To determine why an additional convening will decrease throughput, first examine the limiting variable column of Figure IV-3. Instructor Ward is indicated opposite the -0.098 unit throughput change figure. The assignment listing (Figure IV-3) shows that Ward instructs courses 510G and 536P. How then is Ward related to Hunt? Examination of the Facility file contents (Figure IV-4) shows that both 461V and 536P utilize Classroom 180 in Building N-30, which is available 2080 hours per year. The LP resource data output in Figure IV-3 shows that N-30180 is 100 percent utilized. Therefore, the only way to increase 461V convenings is to decrease 536P convenings. The net effect of increasing 461V convenings and decreasing 536P convenings is a reduction in total student throughput.

The minimum instructor requirement for Course 461V is 504 hours, (42 hours per convening X 12 convenings per year). The difference between the Hunt's optimal utilization level of 718 hours and the minimum 461V requirements is used to increase the number of 461V convenings since Hunt is not qualified to instruct any other courses (Figure IV-2, Column 2). This increases student throughput. The ability to increase 461V convenings is meaningful only if corresponding increases in demand for course 461V can be projected. If no increased demand can be projected for 461V, then 461V convenings should be maintained at the current level. If the decision is made to maintain the current level of 461V convenings, then Hunt will be underutilized 538 hours (1042 hours availability less the 504 hours required for 461V). These 538 hours could then be devoted to cross-training Hunt to qualify to instruct additional courses (the SCRR model can assist in the identification of courses which require additional instructors) or to performing other duties.

Limiting Variable. This column (Figure IV-3, Column 8) identifies the variable whose status would change as a result of either increasing or decreasing the indicated variable. Resource variables have two status levels: (1) when utilization is equal to availability, the resource is 100 percent utilized; (2) when utilization is less than availability, the resource is not 100 percent utilized. Referring to instructor resource Hunt, the Limiting Variable column indicates that as Hunt's utilization level is decreased from 718 hours to 504 hours, the utilization of Classroom 180 in Building N-30 (N-30180) will change from status 1 (100 percent utilized) to status 2 (not 100 percent utilized). As the instructor resource level is decreased, the number of course convenings must also decrease since these two variables are directly proportional. As convenings decrease, facility utilization must also decrease, if all other variables are held constant.

Increasing instructor Hunt's utilization above the 718 hour level will cause instructor Ward to change from status level 1 to status level 2. Increasing course 461V convenings requires a decrease in course 536P convenings since both courses share Classroom 180 which is fully utilized at the indicated optimal instructor utilization rate. From Figure IV-2, Ward teaches both course 510G and 536P. Decreasing 536P convenings will, of necessity, lower Ward's annual utilization.

FACILITY FILE

SCH	CDP	BLDG	RM	RMCAP	RMTP	REQHRS	AVHRS
ASW	461V	N-30	180	10	3	42.0	2080
	510G	N-30	106	12	1	33.0	2080
		N-30	107	18	2	27.0	2080
	510V	N-30	181	10	3	30.0	2080
	510W	FLTLN	HGR	10	2	12.0	2080
		N-30	181	10	3	6.0	2080
	5107	N-19A	120	16	1	40.0	2080
		N-19A	122	16	2	20.0	2080
	536K	N-30	167	10	3	20.0	2080
	536P	N-30	180	10	3	48.0	2080
	5698	N-30	107	18	2	110.0	2080
		N-30	108	18	1	40.0	2080

FIGURE IV-[illegible]

LP OPTIMAL SOLUTION AND SENSITIVITY ANALYSIS - COURSE DATA. The optimal number of annual course convenings which will maximize student throughput is calculated by a linear programming technique. The sensitivity analysis provides information regarding the sensitivity of the optimal solution to changes in the input data, and the solutions that result from such changes. The levels to which the class capacity and the number of annual convenings can increase and decrease before the optimal solution changes are contained in the course data section of the LP optimal solution and sensitivity analysis output. It also gives the incremental change in student throughput per unit increase or decrease in course convenings up to these levels. As with the resourse data output, the course data sensitivity analysis assumes that variables are changed individually and that the rest of the problem remains unaltered. A sample of the LP Optimal Solution and Sensitivity Analysis - Course Data output is shown in Figure IV-5.

Course CDP Number. All courses are identified by a four position alphanumeric field (Figure IV-5, Column 1).

Maximum Annual Convenings. This column (Column 2) lists the optimal number of annual course convenings for each course. The optimal number of convenings is that number of convenings which maximizes total student throughput subject to the resource limitations identified in the previous output section. Any other combination of numbers of convenings for the same set of courses is either not feasible or will result in a lower student throughput. As an example, the optimal number of convenings for course 461V is shown to be 17.1 (from Figure IV-5). Since the number of convenings is established for a one year period, fractional convenings can be interpreted to mean that the course was convened but not completed in the same year. Therefore, 17.1 convenings are equivalent to 18 convenings with the last class convened being ten percent complete at the end of the year.

Current Scheduled Convenings. The current number of scheduled convenings listed in this column (Column 3) is identical to the number of convenings stored for each course in the DOTS data base. This number is established as a lower bound for the maximum annual convening parameter discussed above. In effect, the lower bound represents an additional constraint to the LP problem. The constraint to the variable representing the number of convenings for course 461V states that 461V convenings must be greater than or equal to 12.

Average Class Size. Average class size (Column 4) is calculated by multiplying class capacity by historical course utilization. Data for class capacity and course utilization are stored in the DOTS data base. Class capacities are based upon training considerations such as student/instructor ratio; availability of training equipment, workshop, laboratory, and mock-up facilities; as well as physical considerations such as class size. Course utilization is the ratio of actual student enrollments to class capacity.

The average class size figure serves two functions. (1) Average class sizes are the LP objective function coefficients. Student throughput is established by multiplying the average class size of each course by the optimal number of convenings calculated for that course. (2) All instructor requirements are calculated based on average class size. For example, assume that a course has a 12:1 student/instructor ratio for a 10 hour segment of the course. The class capacity is 144 students. If the course utilization were 100 percent, 12 instructors would be required for that 10 hour course segment for a total of

COURSE CDP NO.	MAXIMUM ANNUAL CONVEN	CURRENT SCHEDULED CONVEN	AVERAGE CLASS SIZE	ANNUAL CONVEN RANGE MINIMUM MAXIMUM	THROUGHPUT CHANGE PER COURSE CONVEN CHANGE	CLASS SIZE RANGE MINIMUM MAXIMUM	LIMITING VARIABLE
461V	17.1	12	2	0.0	-2.0	0.0	N-30180
				24.8	-4.1	6.1	WARD
510G	18.0	6	7	12.7	-3.1	3.9	BROOKS
				26.1	-13.8	20.8	510V
510V	12.0	12	7	8.4	20.7	0.0	461V
				17.4	-20.7	27.7	HUNT
510W	57.9	24	3	0.0	-3.0	0.0	HARRISON
				57.9	NO CHG	+INF	
5107	52.0	24	8	0.0	-8.0	0.0	N-19A120
				52.0	NO CHG	+INF	
536K	73.2	50	10	55.8	-6.4	3.6	510V
				73.2	NO CHG	+INF	
536P	28.4	12	7	21.6	-4.7	2.3	WARD
				32.8	-3.7	10.7	BROOKS
5698	7.7	6	14	0.0	-14.0	0.0	OBERLE
				7.7	NO CHG	+INF	

LP OPTIMAL SOLUTION AND SENSITIVITY ANALYSIS - COURSE DATA

FIGURE IV-5

120 contact hours. However, if the course utilization were 50 percent, the instructor requirement would drop to six for the same portion of the course for a total of only 60 contact hours.

Annual Convenings Range. The annual convenings range (Column 5) indicates the upper and lower limits for the number of annual convenings parameter. The current LP solution remains optimal for all values of the convenings parameter within this range. However, as the number of annual convenings is varied from the indicated optimal, the maximum student throughput will either increase or decrease by the factor printed in the next column, throughout change per course convening change. The specified lower bound, which is the number of current scheduled convenings, is ignored in calculating the range of annual course convenings. For example, the range of annual convenings for course 536K is 55.8-73.2. The solution which maximizes student throughput is 73.2 convenings. The current number of scheduled convenings is 50 per year. If 10 convenings less than the optimal 73.2 were scheduled, the total student throughput would decrease by 64 (Column 6). Note that the student throughput drops only by 6.4 per convening, in spite of the fact that 536K class size is 10. From Figure IV-2, it is seen that course 536K and 510V utilize the same instructor. Therefore, as 536K convenings are decreased, additional convenings of 510V can be scheduled. But since 510V uses more instructor resource per convening and has a smaller class size, less convenings, each with a smaller class size, can be scheduled with the resources made available by reducing 536K convenings.

The annual convenings range (Figure IV-5, Column 5) also provides an indication of the effect of class size on the LP optimal solution. The current solution will remain optimal for class sizes in the range noted by the class size range (Column 7). As the class size drops below the capacity range minimum, the optimal number of convenings will decrease to the convening range minimum, if that quantity is greater than the current number of scheduled convenings. If the convening range minimum is less than the current scheduled convenings, then the optimal number of course convenings will be set equal to the current scheduled convenings. For example, the optimal number of convenings for course 536P is 28.4 based on a class size of 7 students. Should the class size drop below 2.3 (class size range minimum), the optimal number of convenings would decrease to 21.6 (the annual convening range minimum).

The optimal number of annual convenings for course 510G is 18.0 for a class size of 7. If the class size drops to 3.9 or less, the optimal convenings for that course will decrease to the annual convening range minimum (12.7), rather than the current scheduled convenings (6.0). The student throughput for the new optimal solution will decrease by 16.4 (decrease of 5.3 convenings X 3.1 student throughput decrease per convening).

Throughput Change Per Course Convening Change. This column (Column 6) indicates the change in the optimal student throughput which will result from a change in the number of course convenings. As long as the number of course convenings remains within the range indicated by the annual convening range column, the SCRR model need not be rerun. The effect of a change in the number of convenings can be determined by a simple calculation using the throughput change per course convening change. Again, referring to Figure IV-5 (Column 6), if course 510V convenings were to increase from the 12 per year optimal to 13 per year, the total student throughput would decrease by 20.7. From Figure IV-2, courses 510V and 536K share the same instructor (Brown). Increasing 510 convenings from

12.0 to 13.0 shifts 30 hours of Brown's time from 536K to 510V. This 30 hour shift increses 510V convenings by 1.6, but reduces possible 536K convenings by 3.2 (30 ÷ 9.3 hours per 536K convening). Therefore, student throughput will drop even though 510V convenings are increased.

Class Size Range. This column (Column 7) indicates the range of class sizes for which the indicated optimal number of course convenings will remain unchanged. A decrease in class size to below the class size minimum will cause the optimal number of convenings to decrease to either the number of current scheduled convenings or the convening range minimum, whichever is greater. An increase in class size to beyond the class size range maximum will increase the number of course convenings to the convening range maximum. Using course 461V from Figure IV-5 as an example, if the class size were increased from the current level of 2 to 6.1 or more, the optimal number of convenings would increase to 24.8 per year from the current level of 17.1.

Limiting Variable. This column (Column 8) identifies the variable which limits the convenings range and whose value will change as a result of a variation from the optimal convening level within the course convening range. Several examples from Figure IV-5 will clarify the significance of this column. As the number of course 461V convenings are decreased from the indicated optimum, N-30180 utilization will decrease from the 100 percent shown in the SCRR output. This relationship is obvious since a decline in convenings will result in lower resource requirements.

As course 536 convenings decrease from the optimal, course 510V convenings will increase from the Current Scheduled Convenings level. Instructor Brown is shared by courses 510V and 536K. A decrease in 536K convenings will increase the amount of resources available for course 510V. Decreasing 536K convenings will reduce total student throughput by 6.4 per convening deleted.

SCRR MODEL OPERATIONAL PROCEDURES

This section provides detailed procedures for executing the SCRR model, generating instructor assignment listings, modifying resource availability, and modifying course parameters which directly impact instructor requirements. Each of these procedures is initiated by keying a single word into the system via the terminal keyboard. Procedures which require the user to input data are interactive.

Figure IV-6 is an overview of the SCRR model procedures which can be invoked to perform the functions noted above. As indicated, all SCRR model input data are calculated based on the contents of the DOTS Scratch data base. No data inputs are required from the user. Once the model has been executed, the user has the option either to review the model output directly or to generate an instructor assignment listing which details each instructor's requirements by course. Upon reviewing the model output, the user may then elect to either modify the availability of one or more resources, to modify course parameters which determine instructor requirements, or to fix the number of course convenings at the current level. After the input data have been modified by any of the above means, the model is then reexecuted.

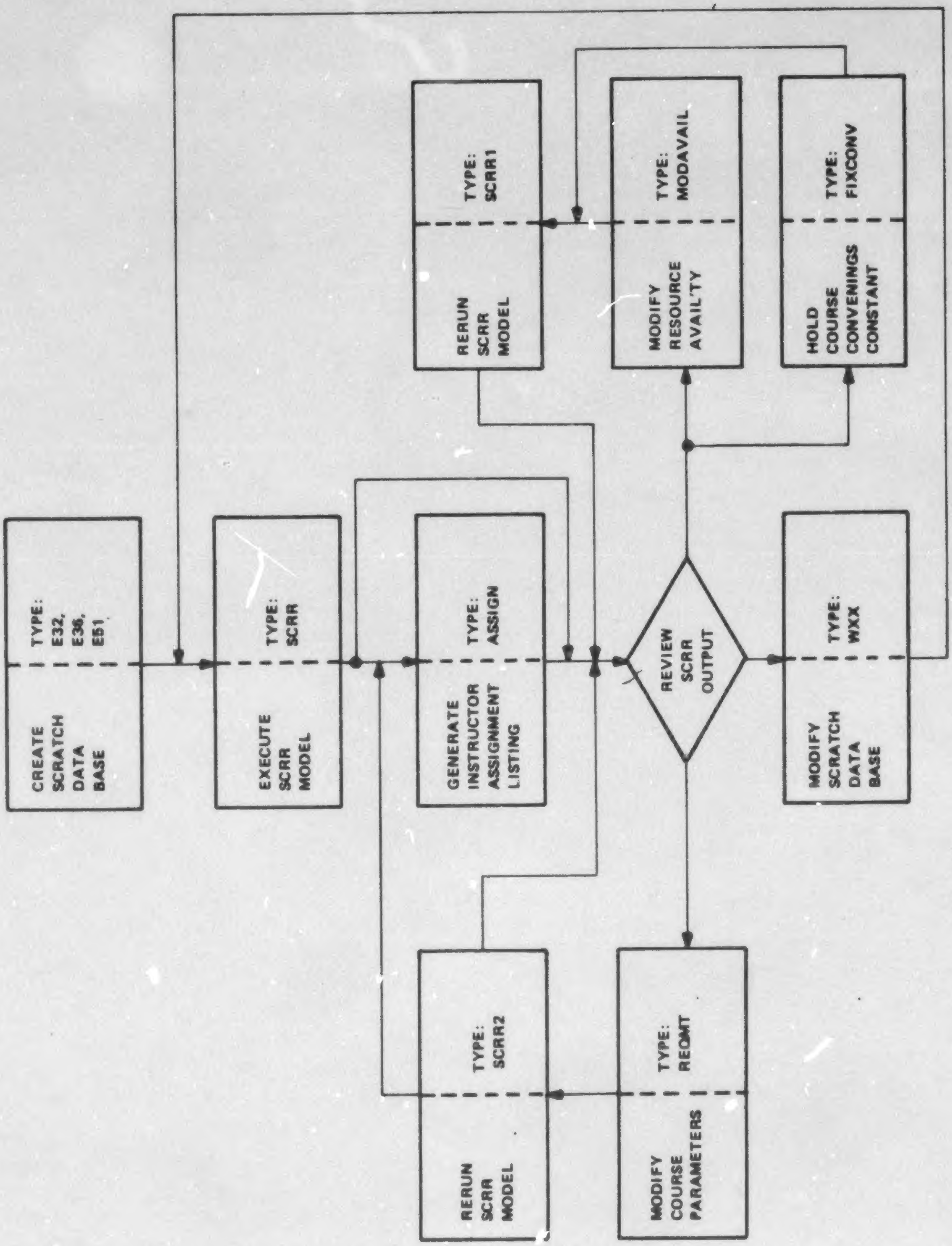

CREATE SCRATCH DATA BASE
TYPE: E32, E36, E51
EXECUTE SCRR MODEL
TYPE: SCRR
GENERATE INSTRUCTOR ASSIGNMENT LISTING
TYPE: ASSIGN
REVIEW SCRR OUTPUT
MODIFY SCRATCH DATA BASE
TYPE: WXX
RERUN SCRR MODEL
TYPE: SCRR1
MODIFY RESOURCE AVAIL'TY
TYPE: MODAVAIL
HOLD COURSE CONVENINGS CONSTANT
TYPE: FIXCONV
RERUN SCRR MODEL
TYPE: SCRR2
MODIFY COURSE PARAMETERS
TYPE: REQMT

Figure IV-6 SCRR Model Operation Overview

SCRATCH DATA BASE CREATION. Detailed procedures for creating a Scratch data base can be found in Section II. It is recommended, but not required, that a Scratch data base be created for a single school rather than the entire training center, prior to executing the SCRR model. This will facilitate analysis of model output in that all resources and courses for the school will be contained on one or two pages of output. If a Scratch data base is created for the total training center, model output will be sorted by course rather than by a school. Limiting the Scratch data base to a single school will also minimize execution time as well as the volume of output.

The data base executive procedures used to create a Scratch data base for a single school are:

E32 - Instructor File
E36 - Facilities File
E51 - Course File

SCRR MODEL EXECUTION. The SCRR model requires a minimum core size of 320K. To ensure that this requirement is met, type:

```
SET CORE 320
```

All terminal entries should be followed by a carriage return. The requirement to depress the carriage return after each line of terminal entry will not be repeated in the SCRR Operational Procedures. The system will respond with:

```
CSS.212 MM/DD/YY
XX.XX.XX
```

where XX.XX.XX is the time-of-day in hours, minutes and seconds.

To execute the SCRR model, type:

```
SCRR
```

The SCRR executive will retrieve the required data elements from the three DOTS Scratch data base files, make additional computations, format resulting data for linear programming (LP) optimization, perform the LP optimization, and format the LP results for output. The system will respond with the following message:

```
THIS PROGRAM PERFORMS THE LINEAR PROGRAMMING OPTIMIZATION OF THE
RESOURCE DATA CURRENTLY STORED IN THE SCRATCH DATA FILES.  NO
FURTHER USER INTERVENTION WILL BE REQUIRED.  DO YOU WISH TO
PROCEED?  (YES/NO)
```

At this point, the user should verify, by checking prior terminal entries, that three Scratch files have been created (instructor, facility, and course) and that each file was created for the same school. If nothing has been overlooked and the user wishes to proceed, type:

```
YES
```

If the user wishes to terminate model execution at this point, type:

```
NO
```

The system will respond with the time-of-day message.

If the proceed option is answered affirmatively, the system will respond after a short pause with the following message:

```
MPS III, ON-LINE VERSION, READY.
MPS COMMAND:
MPS TERMINATING.
TO PRINT SCRR MODEL OUTPUT, TYPE:
P SCRR OUTPUT
```

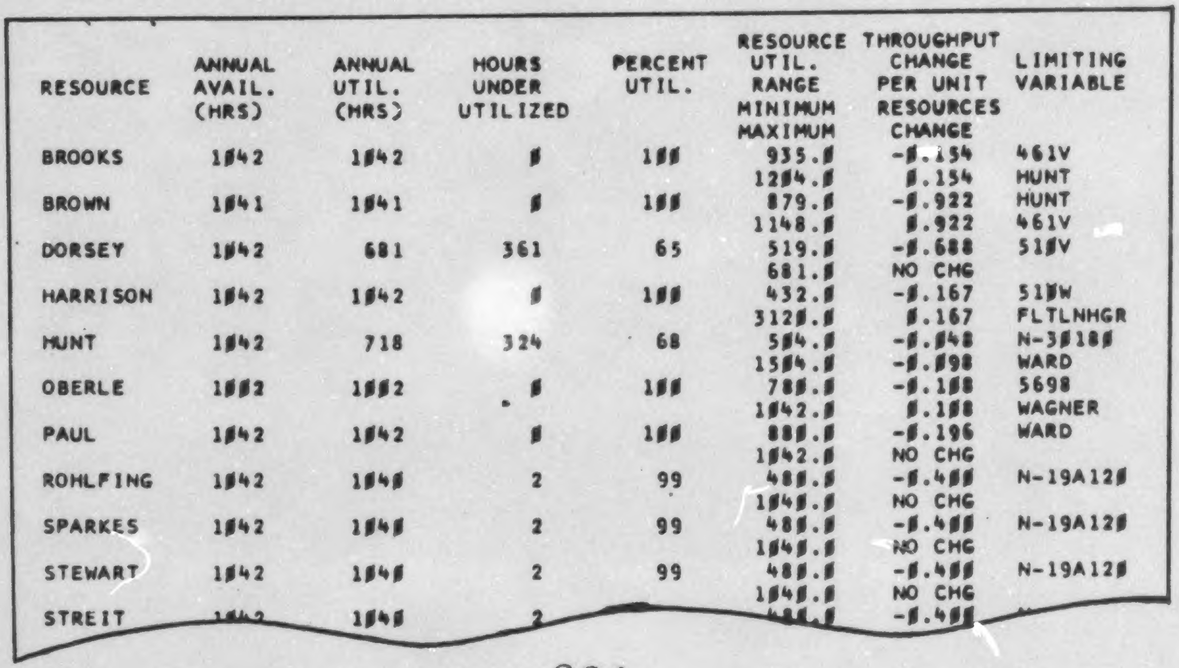
The MPS messages indicate first that the Mathematical Programming System software package has been attached to the operating system, that the LP optimization calculations are being performed, and finally that the LP segment of the model is complete.

The SCRR executive does not automatically print the model output. As the message indicates, the output is printed by typing:

```
P SCRR OUTPUT
```

The SCRR output is contained on a permanent file. Printing the output does not erase the file. The file SCRR OUTPUT will exist and can be printed until the SCRR model is reexecuted. Reexecution of the model will cause the new output to be written on the file SCRR OUTPUT.

A sample SCRR output file follows:



```
                                                           RESOURCE THROUGHPUT
             ANNUAL     ANNUAL      HOURS         PERCENT   UTIL.     CHANGE    LIMITING
RESOURCE     AVAIL.     UTIL.       UNDER         UTIL.     RANGE    PER UNIT   VARIABLE
             (HRS)      (HRS)     UTILIZED                 MINIMUM  RESOURCES
                                                           MAXIMUM   CHANGE
BROOKS        1042       1042           0          100      935.0    -0.154     461V
                                                           1204.0     0.154     HUNT
BROWN         1041       1041           0          100      879.0    -0.922     HUNT
                                                           1148.0     0.922     461V
DORSEY        1042        681         361           65      519.0    -0.688     510V
                                                            681.0    NO CHG
HARRISON      1042       1042           0          100      432.0    -0.167     510W
                                                           3120.0     0.167     FLTLNHGR
HUNT          1042        718         324           68      504.0    -0.048     N-30180
                                                           1504.0    -0.098     WARD
OBERLE        1002       1002           0          100      780.0    -0.108     5698
                                                           1042.0     0.108     WAGNER
PAUL          1042       1042           0          100      880.0    -0.196     WARD
                                                           1042.0    NO CHG
ROHLFING      1042       1040           2           99      480.0    -0.400     N-19A120
                                                           1040.0    NO CHG
SPARKES       1042       1040           2           99      480.0    -0.400     N-19A120
                                                           1040.0    NO CHG
STEWART       1042       1040           2           99      480.0    -0.400     N-19A120
                                                           1040.0    NO CHG
STREIT                   1040           2                            -0.400
```

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```
                                                  ANNUAL    THROUGHPUT    CLASS
COURSE    MAXIMUM    CURRENT      AVERAGE     CONVEN     CHANGE       SIZE      LIMITING
CDP NO.   ANNUAL     SCHEDULED    CLASS       RANGE      PER COURSE   RANGE     VARIABLE
          CONVEN     CONVEN       SIZE        MINIMUM    CONVEN       MINIMUM
                                              MAXIMUM    CHANGE       MAXIMUM
 461V      17.1        12            2           0.0       -2.0          0.0    N-30180
                                                24.8       -4.1          6.1    WARD
 510G      18.0         6            7          12.7       -3.1          3.9    BROOKS
                                                26.1      -13.8         20.8    510V
 510V      12.0        12            7           8.4       20.7          0.0    461V
                                                17.4      -20.7         27.7    HUNT
 510W      57.9        24            3           0.0       -3.0          0.0    HARRISON
                                                57.9     NO CHG         +INF
 5107      52.0        24            8           0.0       -8.0          0.0    N-19A120
                                                52.0     NO CHG         +INF
 536K      73.2        50           10          55.8       -6.4          3.6    510V
                                                73.2     NO CHG         +INF
 536P      28.4        12            7          21.6       -4.7          2.3    WARD
                                                32.8       -3.7         10.7    BROOKS
 5698       7.7         6           14           0.0      -14.0          0.0    OBERLE
                                                 7.7     NO CHG         +INF
```

INSTRUCTOR ASSIGNMENT LISTING GENERATION. To generate a detailed instructor assignment listing for all instructors appearing in the SCRR OUTPUT, type:

```
ASSIGN
```

The system will respond:

```
EXECUTION:
TO PRINT INSTRUCTOR ASSIGNMENTS, TYPE:
P ASSIGN LISTING
```

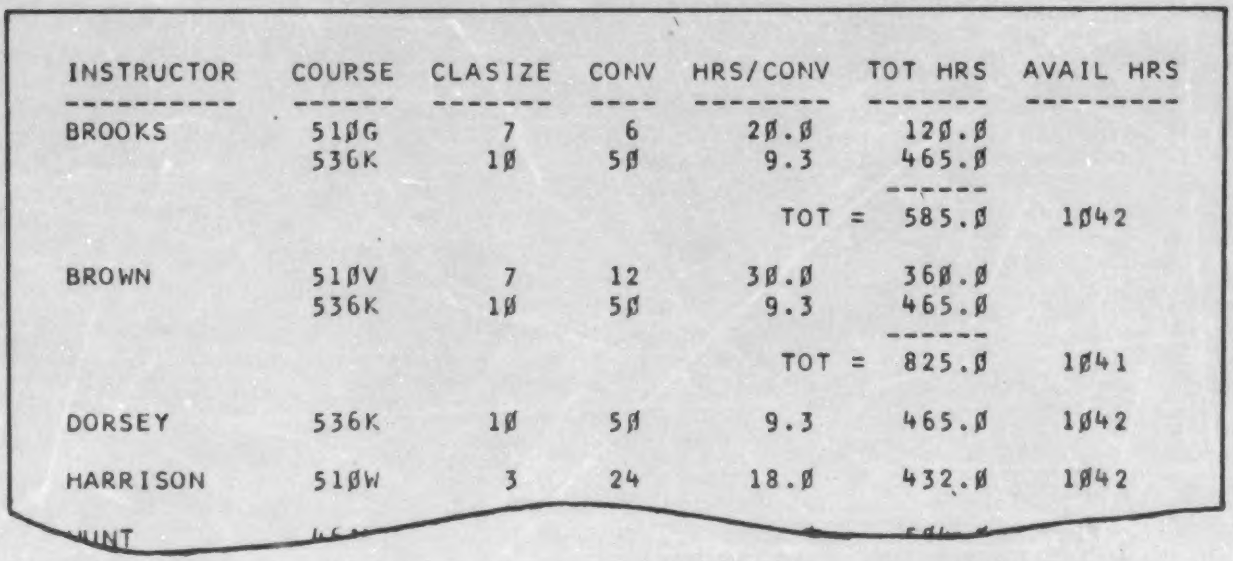
To print the assignment listing, type:

```
P ASSIGN LISTING
```

As with the SCRR OUTPUT, the ASSIGN LISTING is a permanent file and can be printed as often as is required until the ASSIGN executive is repeated, at which time the old listing file will be replaced by the new listing file.

NOTE: The ASSIGN executive should not be invoked until after the SCRR model has been executed.

A sample instructor assignment listing is shown below.



```
INSTRUCTOR    COURSE   CLASIZE   CONV   HRS/CONV   TOT HRS   AVAIL HRS
----------    ------   -------   ----   --------   -------   ---------
BROOKS         510G        7       6       20.0     120.0
               536K       10      50        9.3     465.0
                                                   ------
                                          TOT =     585.0      1042

BROWN          510V        7      12       30.0     360.0
               536K       10      50        9.3     465.0
                                                   ------
                                          TOT =     825.0      1041

DORSEY         536K       10      50        9.3     465.0      1042

HARRISON       510W        3      24       18.0     432.0      1042
```

RESOURCE AVAILABILITY MODIFICATION. To modify the availability of an instructor or a facility, type:

```
MODAVAIL
```

The system will respond:

```
EXECUTION:
ENTER NAME OF INSTRUCTOR OR FACILITY:
```

At this point the user should enter the name of an instructor or a facility (building/room) exactly as it appears in the SCRR OUTPUT. The system will respond:

```
ENTER CURRENT AVAILABLE HOURS, NEW AVAILABLE HOURS:
```

The user should now enter the number of available hours shown in the SCRR OUTPUT for the instructor or facility named above, followed by either a comma or a space, and the new availability figure. The number of available hours must be less than 9,999. The system will then respond either:

```
AVAIL   NAME 1   XXXX   NAME 2   XXXX
```

or

```
AVAIL   NAME 1   XXXX
```

(where either NAME 1 or NAME 2 is the name entered above and XXXX is the current availability) followed by either:

```
          AVAIL    NAME 1    XXXX    NAME 2    AAAA
or
          AVAIL    NAME 1    AAA
```

(where AAAA) is the new availability).

If the name is not entered correctly, the system will respond:

```
EOF:
NO CHANGE
```

If the current available hour figure is not entered correctly, the system will respond either:

```
          AVAIL    NAME 1    XXXX    NAME 2    XXXX
or
          AVAIL    NAME 1    XXXX
followed by:
                             NO CHANGE
```

After the status of the first availability change request has been printed, the system will respond:

```
ANY MORE CHANGES?  (YES/NO)
```

If the respond is YES, the program will recycle and again request the name of the resource to be changed. If the response is NO, the system will respond:

```
CHANGES TO AVAILABLE HOURS HAVE BEEN INCORPORATED.
TO RERUN SCRR MODEL, TYPE:  SCRR1
```

NOTE: The MODAVAIL executive should not be invoked until after the SCRR model has been executed.

CONSTANT COURSE CONVENINGS MODIFICATION. The SCRR model can be executed under two conditions: (1) maximize the number of course convenings based on the level of resources available; or (2) specify the number of course convenings to be constant at the current number of convenings scheduled. Executing the SCRR model under condition (2) will provide the user with an accurate summary of current resource utilization.

To execute the SCRR model under condition (2) as explained above, first type:

```
FIXCONV
```

The system will respond:

```
COURSE CONVENINGS FIXED AT THE CURRENT LEVEL.
TO RERUN THE SCRR MODEL, TYPE:  SCRR1
```

As directed in the above message, to rerun the SCRR model after invoking FIXCONV, type:

```
SCRR1
```

After the system response is printed, type:

```
P SCRR OUTPUT
```

to print the SCRR model output.

COURSE PARAMETER MODIFICATION. To modify course utilization, class capacity, or course length, type:

```
REQMT
```

The system will respond with the following message:

```
DO YOU WISH INSTRUCTIONS TO BE PRINTED? (YES/NO)
```

If the user responds NO, no directions will be printed. However, requests for data entry will be printed. If the user responds YES, the following message will be printed:

```
THIS PROGRAM PROVIDES THE CAPABILITY TO MODIFY COURSE
UTILIZATION, CLASS CAPACITY, AND COURSE LENGTH EXPRESSED
IN CONTACT HOURS TO ASSESS THE IMPACT ON TOTAL INSTRUCTOR
REQUIREMENTS.
*  TO INCREASE UTILIZATION 20% ENTER: .20
*  TO DECREASE UTILIZATION 10% ENTER: -.10
*  IF NO CHANGE IS DESIRED ENTER: 0
ENTER UTILIZATION DELTA
```

The user should enter the utilization delta as requested. The utilization percentage for all courses contained in the DOTS scratch Data Base will be modified by the utilization delta entry. For example, if the current utilization of two courses is .40 and .60, and the utilization delta entered is .5, the new course utilizations will be .60 and .90.

After the course utilization delta has been entered, the system will respond:

```
*  TO INCREASE CLASS CAPACITIES 20% ENTER: .20
*  TO DECREASE CLASS CAPACITIES 10% ENTER: -.10
*  IF NO CHANGE IS DESIRED ENTER:  0
ENTER CLASS CAPACITY DELTA:

*  TO INCREASE COURSE LENGTH 20% ENTER: .20
*  TO DECREASE COURSE LENGTH 10% ENTER: -.10
*  IF NO CHANGE IS DESIRED ENTER: 0
ENTER COURSE LENGTH DELTA:
```

The class capacity and course length deltas should be entered as requested. After the last data entry the system will respond:

```
REQUESTED CHANGES HAVE BEEN INCORPORATED.
TO RERUN SCRR MODEL, TYPE:  SCRR2
```

As the above message indicates, to rerun the SCRR model after executing REQMT, type:

```
SCRR2
```

NOTE: The REQMT executive should not be invoked until after the SCRR model has been executed.

SCRR MODEL EXECUTION PROCEDURES SUMMARY

MODEL FUNCTION	KEYBOARD ENTRY
Execute SCRR model (after creating scratch Data Base)	SCRR
Generate instructor assignment listing (SCRR must be executed first)	ASSIGN
Modify resource (instructor or facility) availability	MODAVAIL
Fix the number of course convenings at the current level (do not optimize)	FIXCONV
Rerun SCRR model after MODAVAIL or FIXCONV	SCRR1
Modify course parameters (course utilization, class capacity, course length)	REQMT
Rerun SCRR model after REQMT	SCRR2

SCRR MODEL OPERATIONAL TEST PROCEDURES

The SCRR operational test has been designed to exercise all SCRR model software. Since, operationally, all SCRR model input is computed based on the contents of the DOTS Data Base, a miniature version of the DOTS data base has been created to test the model/data base interface software. This Test data base will provide a constant data input to the SCRR model. The operational test will be considered successful if the model output which is generated as a result of following the procedures outlined below, is identical to the model output printed in this section. In addition to the operational test procedures and the operational test output, a description of the Test data base is also included below.

SCRR TEST DATA BASE DESCRIPTION: The Test data base is identical to the DOTS data base in every way but size. Like the DOTS data base, the Test base is divided into three files: the course file (TESTC); the instructor file (TESTI); and the facility file (TESTF). To minimize storage costs and execution time, most fields not required for SCRR model input have been omitted from the Test data base. The descriptions of the three Test data base files are presented below:

```
DESCRIPTION     FOR      RAMIS    FILE     NAMED    TESTC
.
LIST    FIELD NAME     ALIAS          TYPE   LENGTH   LEVEL   SEGMENT   SORT FLAG
----    ----------     -----          ----   ------   -----   -------   ---------
   1    SCH            SCH            A      4        1             1   S
   2    CDP            CDP            A      4        2            10   S
   3    DEL            DEL            A      1        3            10
   4    CONV1          CONV1          I      3        3            10
   5    CAP1           CAP1           I      3        3            10
   6    UCAP           UCAP           I      3        3            10
   7    SIR            SIR            F      4.1      4             2
   8    CHRS           CHRS           F      5.1      4             2
   9    CTYP           CTYP           A      1        4             2
  10    ID             ID             A      9        5             3
  11    ASN            ASN            I      1        5             3
  12    NME            NME            A      16       6            -1   V
```

```
DESCRIPTION     FOR      RAMIS    FILE     NAMED    TESTI
.
LIST    FIELD NAME     ALIAS          TYPE   LENGTH   LEVEL   SEGMENT   SORT FLAG
----    ----------     -----          ----   ------   -----   -------   ---------
   1    ID             ID             A      9        1            15   S
   2    NME            NME            A      16       2             1
   3    SCH            SCH            A      4        2             1
   4    ROT            ROT            I      4        2             1
   5    CDP            CDP            A      4        3             3
   6    LDTE           LDTE           I      6        3             3
   7    TT             TT             A      3        4            14
   8    CW             CW             F      4.1      4            14
   9    QTD            QTD            F      5.1      4            14
  10    YTD            YTD            F      6.1      4            14
```

```
DESCRIPTION      FOR      RAMIS    FILE     NAMED    TESTF

LIST   FIELD NAME     ALIAS                TYPE  LENGTH  LEVEL  SEGMENT  SORT FLAG
----   ----------     -----                ----  ------  -----  -------  ---------
   1   SCH            SCH                  A     4       1        10     S
   2   CDP            CDP                  A     4       2        10     S
   3   BLDG           BLDG                 A     5       3         2
   4   RM             RM                   A     3       3         2
   5   RMCAP          RMCAP                I     3       3         2
   6   RMTP           RMTP                 A     1       3         2
   7   REQHRS         REQHRS               F     6.1     3         2
   8   AVHRS          AVHRS                I     5       3         2
```

To complete the description of SCRR model data input for the operational test, the contents of the three test data files are included on the following pages. The contents of the test data files will remain constant.

COURSE FILE (TESTC)

```
CDP    CONV1   CAP1   UCAP   SIR    CHRS    CTYP   NME               ID          ASN
---    -----   ----   ----   ---    ----    ----   ---               --          ---
461V    12      10     20     5.0    18.0   L      HUNT              243540492   1
                             10.0    24.0   T      HUNT              243540492   1
510G     6      12     60     6.0    27.0   L      WARD              262567698   1
                                                   BROOKS            450663526   1
                                                   PAUL              350328700   1
                             12.0    33.0   T      WARD              262567698   1
                                                   BROOKS            450663526   1
                                                   PAUL              350328700   1
510V    12      10     65    10.0    30.0   B      BROWN             272423719   1
510W    24      10     25    10.0    18.0   B      HARRISON          479424748   1
5107    24      16     50     5.0    20.0   L      STREIT            355324236   1
                                                   STEWART           252604158   1
                                                   SPARKES           463685542   1
                                                   ROHLFING          358403587   1
                             16.0    40.0   T      STREIT            355324236   1
                                                   STEWART           252604158   1
                                                   SPARKES           463685542   1
                                                   ROHLFING          358403587   1
536K    50      10     95     5.0     8.0   L      BROWN             272423719   1
                                                   BROOKS            450663526   1
                                                   DORSEY            220348942   1
                             10.0    12.0   T      BROWN             272423719   1
                                                   BROOKS            450663526   1
                                                   DORSEY            220348942   1
536P    12       8     90     8.0    48.0   B      BROWN             272423719   0
                                                   PAUL              350328700   1
                                                   WARD              262567698   1
5698     6      18     80     6.0   110.0   L      OBERLE            512344273   1
                                                   WAGNER            527549719   1
                             18.0    40.0   T      OBERLE            512344273   1
                                                   WAGNER            527549719   1
```

INSTRUCTOR FILE (TESTI)

```
PAGE     1


SCH   NME              ID          ROT   CDP   TT    CW     QTD      YTD
---   ---              --          ---   ---   --    --     ---      ---
ASW   BROOKS           450663526   1175  510G  A1     5.0    65.0     65.0
                                               A2     1.0    13.0     13.0
                                               A3     3.0    39.0     39.0
                                               A5     1.0    13.0     13.0
                                         536K  A1    15.0   195.0    195.0
                                               A2     2.0    26.0     26.0
                                               A3     7.0     9.0    191.0
                                               A5     4.0    52.0     52.0
                                               B1     2.0    26.0     26.0
      BROWN            272423719    877  510V  A1     7.0    91.0     91.0
                                               A2     1.0    13.0     13.0
                                               A3     3.0    39.0  [illegible]
                                               A5     1.0    13.0     13.0
                                               B1     2.0    26.0     26.0
                                         536K  A1     3.0    39.0     39.0
                                               A2     1.0    13.0     13.0
                                               A3     2.0    26.0     26.0
                                               A5     1.0    13.0     13.0
                                         536F  A1    10.0   130.0    130.0
                                               A2     3.0    39.0     39.0
                                               A3     5.0    65.0     65.0
                                               A5     3.0    39.0     39.0
      DORSEY           220348942    178  536K  A1    20.0   260.0    260.0
                                               A2     3.0    29.0     29.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      HARRISON         479424748    279  510W  A1    20.0   260.0    260.0
                                               A2     3.0    39.0     39.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      HUNT             243540492    576  461V  A1    20.0   260.0    260.0
                                               A2     3.0    39.0     39.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      OBERLE           512344273    576  5698  A1    20.0   260.0    250.0
                                               A2     3.0    29.0     29.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      PAUL             350328700    476  510G  A1    20.0   260.0    260.0
                                               A2     3.0    39.0     39.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      ROHLFING         358403587   1177  5107  A1    20.0   260.0    260.0
                                               A2     3.0    29.0     29.0
                                               A3    10.0   130.0    130.0
                                               A5     5.0    65.0     65.0
                                               B1     2.0    26.0     26.0
      SPARKES          463685542   1177  5107  A1    20.0   260.0    260.0
```

INSTRUCTOR FILE (Continued)

```
PAGE      2

SCH   NME                  ID          ROT    CDP    TT    CW     QTD      YTD
---   ---                  --          ---    ---    --    --     ---      ---
ASW   SPARKES              463685542   1177   5107   A2     3.0    29.0     29.0
                                                     A3    10.0   130.0    130.0
                                                     A5     5.0    65.0     65.0
                                                     B1     2.0    26.0     26.0
      STEWART              252604158    775   5107   A1    20.0   260.0    260.0
                                                     A2     3.0    29.0     29.0
                                                     A3    10.0   130.0    130.0
                                                     A5     5.0    65.0     65.0
                                                     B1     2.0    26.0     26.0
      STREIT               355324236    875   5107   A1    20.0   260.0    260.0
                                                     A2     3.0    39.0     39.0
                                                     A3    10.0   130.0    130.0
                                                     A5     5.0    65.0     65.0
                                                     B1     2.0    26.0     26.0
      WAGNER               527549719    876   5698   A1    20.0   260.0    260.0
                                                     A2     3.0    29.0     29.0
                                                     A3    10.0   130.0    130.0
                                                     A5     5.0    65.0     65.0
                                                     B1     2.0    26.0     26.0
      WARD                 262567698   1174   510G   A1    20.0   260.0    260.0
                                                     A2     3.0    39.0     39.0
                                                     A3    10.0   130.0    130.0
                                                     A5     5.0    65.0     65.0
                                                     B1     2.0    26.0     26.0
```

FACILITY FILE (TESTF)

```
SCH    CDP    BLDG    RM    RMCAP   RMTP   REQHRS   AVHRS
---    ---    ----    --    -----   ----   ------   -----
ASW    461V   N-30    180    10     3        42.0   2080
       510G   N-30    106    12     1        33.0   2080
       510G   N-30    107    18     2        27.0   2080
       510V   N-30    181    10     3        30.0   2080
       510W   FLTLN   HGR    10     2        12.0   2080
       510W   N-30    181    10     3         6.0   2080
       5107   N-19A   120    16     1        40.0   2080
       5107   N-19A   122    16     2        20.0   2080
       536K   N-30    167    10     3        20.0   2080
       536P   N-30    180    10     3        48.0   2080
       5698   N-30    107    18     2       110.0   2080
       5698   N-30    108    18     1        40.0   2080
```

OPERATIONAL TEST PROCEDURES. This section presents the detailed steps required to perform the SCRR model operational test. These procedures assume that the user has successfully completed the NCSS login procedures.

a) To initialize the operational test, type:

```
SCRRTEST
```

followed by a carriage return. The SCRRTEST routine modifies the SCRR software so that model input data are computed from the Test data files TESTC, TESTI, and TESTF, rather than either the DOTS data base files COURSE, INST, and FACIL, or the Scratch data base files MODCOURSE, MODINST, and MODFACIL.

Upon successful completion, the system will respond with the time-of-day in hours, minutes, and seconds (XX.XX.XX).

b) The SCRR model requires a minimum computer core size of 320K. To ensure that this requirement is met, type:

```
SET CORE 320
```

followed by a carriage return. The system will respond with

```
CSS.211 MM/DD/YY
XX.XX.XX
```

c) To initialize SCRR model processing, type:

```
SCRR
```

followed by a carriage return. The SCRR executive will retrieve the required data elements from the three Test data files, make additional computations, format resulting data for linear programming (LP) optimization, perform LP optimization, and format LP results for output. The system will respond with the following message:

```
THIS PROGRAM PERFORMS THE LINEAR PROGRAMMING OPTIMIZATION
OF THE RESOURCE DATA CURRENTLY STORED IN THE SCRATCH DATA
FILES.  NO FURTHER USER INTERVENTION WILL BE REQUIRED.
DO YOU WISH TO PROCEED?  (YES/NO)
```

At this point, the user should verify that SCRRTEST has been entered prior to typing SCRR. If SCRRTEST has been entered, the user should respond by typing:

```
YES
```

followed by a carriage return. If SCRRTEST was not previously entered, the user should reply:

```
NO
```

followed by a carriage return. The system will respond with a time-of-day message, at which point step a) of this procedure should be repeated.

If the proceed option is answered affirmatively, the system will respond after a short pause with the following messages:

```
MPS III, ON-LINE VERSION, READY.
MPS COMMAND:
MPS III TERMINATING.
TO PRINT SCRR MODEL OUTPUT, TYPE:
P SCRR OUTPUT
```

The MPS messages indicate first that the Mathematical Programming System software package has been attached to the operating system, then that the optimization calculations are being performed, and finally that the optimization is complete.

The SCRR executive does not automatically print the model output. As the message indicates to print the SCRR model output, type:

```
P SCRR OUTPUT
```

Prior to depressing the carriage return key, the CLEAR and SHIFT keys should be depressed simultaneously. This will clear the terminal screen. After the screen is clear, the carriage return should be depressed.

Typing P SCRR OUTPUT will cause the following output to appear on the screen. Steps a), b), and c) of this procedure can be considered successful only if the following output is exactly duplicated.

```
                                                   ANNUAL   THROUGHPUT  CLASS
COURSE     MAXIMUM    CURRENT     AVERAGE    CONVEN     CHANGE       SIZE     LIMITING
CDP NO.    ANNUAL     SCHEDULED   CLASS      RANGE      PER COURSE   RANGE    VARIABLE
           CONVEN     CONVEN      SIZE       MINIMUM     CONVEN      MINIMUM
                                             MAXIMUM     CHANGE      MAXIMUM
 461V       17.1        12           2         0.0        -2.0         0.0    N-30180
                                              24.8        -4.1         6.1    WARD
 510G       18.0         6           7        12.7        -3.1         3.9    BROOKS
                                              26.1       -13.8        20.8    510V
 510V       12.0        12           7         8.4        20.7         0.0    461V
                                              17.4       -20.7        27.7    HUNT
 510W       57.9        24           3         0.0        -3.0         0.0    HARRISON
                                              57.9      NO CHG        +INF
 5107       52.0        24           8         0.0        -8.0         0.0    N-19A120
                                              52.0      NO CHG        +INF
 536K       73.2        50          10        55.8        -6.4         3.6    510V
                                              73.2      NO CHG        +INF
 536P       28.4        12           7        21.6        -4.7         2.3    WARD
                                              32.8        -3.7        10.7    BROOKS
 5698        7.7         6          14         0.0       -14.0         0.0    OBERLE
                                               7.7      NO CHG        +INF
```

```
                                                         RESOURCE THROUGHPUT
            ANNUAL    ANNUAL     HOURS       PERCENT    UTIL.      CHANGE     LIMITING
RESOURCE    AVAIL.    UTIL.      UNDER       UTIL.      RANGE      PER UNIT   VARIABLE
            (HRS)     (HRS)      UTILIZED               MINIMUM    RESOURCES
                                                        MAXIMUM    CHANGE
BROOKS       1042      1042           0        100      935.0     -0.154      461V
                                                        1204.0     0.154      HUNT
BROWN        1041      1041           0        100      879.0     -0.922      HUNT
                                                        1148.0     0.922      461V
DORSEY       1042       681         361         65      519.0     -0.688      510V
                                                        681.0     NO CHG
HARRISON     1042      1042           0        100      432.0     -0.167      510W
                                                        3120.0     0.167      FLTLNHGR
HUNT         1042       718         324         68      504.0     -0.048      N-30180
                                                        1504.0    -0.098      WARD
OBERLE       1002      1002           0        100      780.0     -0.108      5698
                                                        1042.0     0.108      WAGNER
PAUL         1042      1042           0        100      880.0     -0.196      WARD
                                                        1042.0    NO CHG
ROHLFING     1042      1040           2         99      480.0     -0.400      N-19A120
                                                        1040.0    NO CHG
SPARKES      1042      1040           2         99      480.0     -0.400      N-19A120
                                                        1040.0    NO CHG
STEWART      1042      1040           2         99      480.0     -0.400      N-19A120
                                                        1040.0    NO CHG
STREIT       1042      1040           2         99      480.0     -0.400      N-19A120
                                                        1040.0    NO CHG
WAGNER       1042      1002          40         96      780.0     -0.108      OBERLE
                                                        1002.0    NO CHG
WARD         1042      1042           0        100      880.0     -0.196      HUNT
                                                        1042.0     0.196      PAUL
FLTLNHGR     2080       695        1385         33      288.0     -0.250      HARRISON
                                                        694.7     NO CHG
N-19A120     2080      2080           0        100      960.0     -0.200      5107
                                                        2084.0     0.200      STREIT
N-19A122     2080      1040        1040         50      480.0     -0.400      N-19A120
                                                        1040.0    NO CHG
N-30106      2080       596        1484         28      419.1     -0.093      BROOKS
                                                        862.9     -0.417      510V
N-30107      2080      1335         745         64      1190.7    -0.114      BROOKS
                                                        1553.9    -0.510      510V
N-30108      2080       308        1772         14      240.0     -0.350      OBERLE
                                                        308.3     NO CHG
N-30167      2080      1465         615         70      1116.1    -0.320      510V
                                                        1464.5    NO CHG
N-30180      2080      2080           0        100      1866.0    -0.048      461V
                                                        2404.0     0.048      HUNT
N-30181      2080       707        1373         34      504.0     -0.500      HARRISON
                                                        869.3     -0.688      510V
```

d) to generate a detailed instructor assignment listing for all instructors appearing in the SCRR OUTPUT, type:

ASSIGN

followed by a carriage return. The system will respond:

```
EXECUTION:
TO PRINT INSTRUCTOR ASSIGNMENTS, TYPE:
P ASSIGN LISTING
```

Then type:

P ASSIGN LISTING

Prior to depressing the carriage return, the CLEAR and SHIFT keys should be depressed simultaneously. This will clear the terminal screen. After the screen is clear the carriage return should be depressed.

Operational test procedure d) is successful if the following output is duplicated exactly.

```
INSTRUCTOR   COURSE  CLASIZE  CONV  HRS/CONV  TOT HRS  AVAIL HRS
----------   ------  -------  ----  --------  -------  ---------
BROOKS        510G       7      6      20.0     120.0
              536K      10     50       9.3     465.0
                                               ------
                                      TOT =     585.0     1042

BROWN         510V       7     12      30.0     360.0
              536K      10     50       9.3     465.0
                                               ------
                                      TOT =     825.0     1041

DORSEY        536K      10     50       9.3     465.0     1042

HARRISON      510W       3     24      18.0     432.0     1042

HUNT          461V       2     12      42.0     504.0     1042

OBERLE        5698      14      6     130.0     780.0     1002

PAUL          510G       7      6      20.0     120.0
              536P       7     12      24.0     288.0
                                               ------
                                      TOT =     408.0     1042

ROHLFING      5107       8     24      20.0     480.0     1042

SPARKES       5107       8     24      20.0     480.0     1042

STEWART       5107       8     24      20.0     480.0     1042

STREIT        5107       8     24      20.0     480.0     1042

WAGNER        5698      14      6     130.0     780.0     1042

WARD          510G       7      6      20.0     120.0
              536P       7     12      24.0     288.0
                                               ------
                                      TOT =     408.0     1042
```

e) to modify the availability of an instructor or a facility, type:

```
MODAVAIL
```

followed by a carriage return. The system will respond:

```
EXECUTION:
ENTER NAME OF INSTRUCTOR OR FACILITY:
```

Then type:

```
BROWN
```

followed by a carriage return. The system will respond:

```
ENTER CURRENT AVAILABLE HOURS, NEW AVAILABLE HOURS:
```

Then type:

```
1041  1250
```

followed by a carriage return. The system will respond:

```
AVAIL     BROOKS     1042     BROWN     1041
AVAIL     BROOKS     1042     BROWN     1250
```

to indicate that the availability change has been made. The SCRR OUTPUT shown in step c) indicates that the greatest improvement in total student throughput can be achieved by increasing BROWN's availability. Therefore, before generating a new SCRR OUTPUT listing, BROWN's availability is changed from the current 1041 hours to the indicated minimum requirement of 1250 hours.

The system will then ask:

```
ANY MORE CHANGES?  (YES/NO)
```

Type:

```
NO
```

followed by a carriage return. The system will respond:

```
CHANGES TO AVAILABLE HOURS HAVE BEEN INCORPORATED.
TO RERUN SCRR MODEL, TYPE:  SCRR1
```

As directed in the above message, to rerun the SCRR model type:

```
SCRR1
```

followed by a carriage return. The system will respond:

```
MPS III, ON-LINE VERSION, READY.
MPS COMMAND:
MPS III TERMINATING.
TO PRINT SCRR MODEL OUTPUT, TYPE:
P SCRR OUTPUT
```

To print the SCRR OUTPUT which now includes the availability change made above, type:

P SCRR OUTPUT

Prior to depressing the carriage return, the CLEAR and SHIFT keys should be depressed simultaneously to clear the terminal screen. After the screen is cleared, the carriage return should be depressed. Test procedure e) is successful if the following output is duplicated exactly.

```
                                                          RESOURCE THROUGHPUT
            ANNUAL      ANNUAL      HOURS       PERCENT   UTIL.     CHANGE     LIMITING
RESOURCE    AVAIL.      UTIL.       UNDER       UTIL.     RANGE     PER UNIT   VARIABLE
            (HRS)       (HRS)       UTILIZED              MINIMUM   RESOURCES
                                                          MAXIMUM   CHANGE
BROOKS       1042        1042            0        100     1010.0    -0.350     510G
                                                          1144.0     0.350     WARD
BROWN        1250        1250            0        100     1148.0    -0.725     WARD
                                                          1282.0     0.725     510G
DORSEY       1042         890          152         85      788.0    -0.492     510V
                                                           890.0    NO CHG
HARRISON     1042        1042            0        100      432.0    -0.167     510W
                                                          3120.0     0.167     FLTLNHGR
HUNT         1042         504          538         48      504.0    NO CHG
                                                          1504.0    -0.098     461V
OBERLE       1002        1002            0        100      780.0    -0.108     5698
                                                          1042.0     0.108     WAGNER
PAUL         1042         940          102         90      671.0    -0.196     461V
                                                          1042.0    -0.492     510V
ROHLFING     1042        1040            2         99      480.0    -0.400     N-19A120
                                                          1040.0    NO CHG
SPARKES      1042        1040            2         99      480.0    -0.400     N-19A120
                                                          1040.0    NO CHG
STEWART      1042        1040            2         99      480.0    -0.400     N-19A120
                                                          1040.0    NO CHG
STREIT       1042        1040            2         99      480.0    -0.400     N-19A120
                                                          1040.0    NO CHG
WAGNER       1042        1002           40         96      780.0    -0.108     OBERLE
                                                          1002.0    NO CHG
WARD         1042         940          102         90      671.0    -0.196     461V
                                                          1042.0    -0.492     510V
FLTLNHGR     2080         695         1385         33      288.0    -0.250     HARRISON
                                                           694.7    NO CHG
N-19A120     2080        2080            0        100      960.0    -0.200     5107
                                                          2084.0     0.200     STREIT
N-19A122     2080        1040         1040         50      480.0    -0.400     N-19A120
                                                          1040.0    NO CHG
N-30106      2080         251         1829         12      198.0    -0.212     BROOKS
                                                           419.1    -0.298     510V
N-30107      2080        1053         1027         50      865.2    -0.127     OBERLE
                                                          1190.7    -0.364     510V
N-30108      2080         308         1772         14      240.0    -0.350     OBERLE
                                                           308.3    NO CHG
N-30167      2080        1914          166         92     1694.6    -0.229     510V
                                                          1914.0    NO CHG
N-30180      2080        2080            0        100     1080.0    -0.146     536P
                                                          2284.0     0.146     WARD
N-30181      2080         707         1373         34      504.0    -0.500     HARRISON
                                                           809.3    -0.492     510V
```

```
                                                        ANNUAL   THROUGHPUT   CLASS
COURSE     MAXIMUM     CURRENT      AVERAGE    CONVEN     CHANGE      SIZE      LIMITING
CDP NO.    ANNUAL     SCHEDULED     CLASS      RANGE    PER COURSE   RANGE      VARIABLE
           CONVEN      CONVEN       SIZE      MINIMUM     CONVEN    MINIMUM
                                              MAXIMUM     CHANGE    MAXIMUM
461V        12.0         12           2          7.1        4.1        0.0      WARD
                                                24.8       -4.1        6.1      HUNT
510G         7.6          6           7          0.0       -7.0        0.0      BROOKS
                                                12.7       -9.8       16.8      510V
510V        12.0         12           7         10.9       14.8        0.0      510G
                                                15.4      -14.8       21.8      WARD
510W        57.9         24           3          0.0       -3.0        0.0      HARRISON
                                                57.9     NO CHG       +INF
5107        52.0         24           8          0.0       -8.0        0.0      N-19A120
                                                52.0     NO CHG       +INF
536K        95.7         50          10         84.7       -4.6        5.4      510V
                                                95.7     NO CHG       +INF
536P        32.8         12           7         21.6       -4.7        2.3      461V
                                                32.8     NO CHG       +INF
5698         7.7          6          14          0.0      -14.0        0.0      OBERLE
                                                 7.7     NO CHG       +INF
```

f) To fix the number of course convenings per year at the current level, type:

FIXCONV

followed by a carriage return. Upon successful completion, the system will respond:

```
COURSE CONVENINGS FIXED AT THE CURRENT LEVEL.
TO RERUN SCRR MODEL, TYPE:  SCRR1
```

As directed in the above message to return the SCRR model, type:

SCRR1

followed by a carriage return. As in e), after the system response is printed, type:

P SCRR OUTPUT

to print SCRR model output. Test procedure f) is successful if the following output is duplicated exactly.

RESOURCE	ANNUAL AVAIL. (HRS)	ANNUAL UTIL. (HRS)	HOURS UNDER UTILIZED	PERCENT UTIL.	RESOURCE UTIL. RANGE MINIMUM MAXIMUM	THROUGHPUT CHANGE PER UNIT RESOURCES CHANGE	LIMITING VARIABLE
BROOKS	1042	585	457	56	585.0	NO CHG	
					585.0	NO CHG	
BROWN	1250	825	425	65	825.0	NO CHG	
					825.0	NO CHG	
DORSEY	1042	465	577	44	465.0	NO CHG	
					465.0	NO CHG	
HARRISON	1042	432	610	41	432.0	NO CHG	
					432.0	NO CHG	
HUNT	1042	504	538	48	504.0	NO CHG	
					504.0	NO CHG	
OBERLE	1002	780	222	77	780.0	NO CHG	
					780.0	NO CHG	
PAUL	1042	408	634	39	408.0	NO CHG	
					408.0	NO CHG	
ROHLFING	1042	480	562	46	480.0	NO CHG	
					480.0	NO CHG	
SPARKES	1042	480	562	46	480.0	NO CHG	
					480.0	NO CHG	
STEWART	1042	480	562	46	480.0	NO CHG	
					480.0	NO CHG	
STREIT	1042	480	562	46	480.0	NO CHG	
					480.0	NO CHG	
WAGNER	1042	780	262	74	780.0	NO CHG	
					780.0	NO CHG	
WARD	1042	408	634	39	408.0	NO CHG	
					408.0	NO CHG	
FLTLNMGR	2080	288	1792	13	288.0	NO CHG	
					288.0	NO CHG	
N-19A120	2080	960	1120	46	960.0	NO CHG	
					960.0	NO CHG	
N-19A122	2080	480	1600	23	480.0	NO CHG	
					480.0	NO CHG	
N-30106	2080	198	1882	9	198.0	NO CHG	
					198.0	NO CHG	
N-30107	2080	822	1258	39	822.0	NO CHG	
					822.0	NO CHG	
N-30108	2080	240	1840	11	240.0	NO CHG	
					240.0	NO CHG	
N-30167	2080	1000	1080	48	1000.0	NO CHG	
					1000.0	NO CHG	
N-30180	2080	1080	1000	51	1080.0	NO CHG	
					1080.0	NO CHG	
N-30181	2080	504	1576	24	504.0	NO CHG	
					504.0	NO CHG	

```
                                                        ANNUAL   THROUGHPUT   CLASS
COURSE     MAXIMUM    CURRENT     AVERAGE   CONVEN     CHANGE       SIZE      LIMITING
CDP NO.    ANNUAL    SCHEDULED     CLASS    RANGE    PER COURSE    RANGE      VARIABLE
           CONVEN      CONVEN      SIZE    MINIMUM     CONVEN     MINIMUM
                                           MAXIMUM     CHANGE     MAXIMUM
 461V       12.0         12           2       0.0       -2.0        0.0
                                             24.8        2.0       +INF       HUNT
 510G        6.0          6           7       0.0       -7.0        0.0
                                             28.8        7.0       +INF       BROOKS
 510V       12.0         12           7       0.0       -7.0        0.0
                                             26.2        7.0       +INF       BROWN
 510W       24.0         24           3       0.0       -3.0        0.0
                                             57.9        3.0       +INF       HARRISON
 5107       24.0         24           8       0.0       -8.0        0.0
                                             52.0        8.0       +INF       N-19A120
 536K       50.0         50          10       0.0      -10.0        0.0
                                             95.7       10.0       +INF       BROWN
 536P       12.0         12           7       0.0       -7.0        0.0
                                             32.8        7.0       +INF       N-30180
 5698        6.0          6          14       0.0      -14.0        0.0
                                              7.7       14.0       +INF       OBERLE
```

g) To initialize the requirement modification routine for the operational test, type:

TESTREQ

followed by a carriage return. Upon successful completion, the system will respond with the time-of-day.

h) To modify training system requirements, type:

REQMT

followed by a carriage return. The system will respond as follows:

DO YOU WISH INSTRUCTIONS TO BE PRINTED? (YES/NO):

Type:

YES

followed by a carriage return.

The system will respond:

```
THIS PROGRAM PROVIDES THE CAPABILITY TO MODIFY COURSE UTILIZATION,
CLASS CAPACITY, AND COURSE LENGTH EXPRESSED IN CONTACT HOURS TO
ASSESS THE IMPACT ON TOTAL INSTRUCTOR REQUIREMENTS.
*  TO INCREASE UTILIZATION 20% ENTER: .20
*  TO DECREASE UTILIZATION 10% ENTER: -.10
*  IF NO CHANGE IS DESIRED ENTER: 0
ENTER UTILIZATION DELTA:
```

Type:

```
-.5
```

followed by a carriage return. The system will respond:

```
* TO INCREASE CLASS CAPACITIES 20% ENTER: .20
* TO DECREASE CLASS CAPACITIES 10% ENTER: -.10
* IF NO CHANGE IS DESIRED ENTER: 0
ENTER CLASS CAPACITY DELTA:
```

Type:

```
0
```

followed by a carriage return. The system will respond:

```
* TO INCREASE COURSE LENGTH 20% ENTER: .20
* TO DECREASE COURSE LENGTH 10% ENTER: -.10
* IF NO CHANGE IS DESIRED ENTER:  0
ENTER COURSE LENGTH DELTA:
```

Type:

```
0
```

followed by a carriage return. Upon successful completion, the system will respond:

```
CHANGES HAVE BEEN INCORPORATED.
TO RERUN SCRR MODEL, TYPE:  SCRR2
```

To verify that the REQMT routine executed successfully, the user should now rerun the ASSIGN program (see test procedure step d)). Test procedure h) is successful if the following output is duplicated exactly.

```
INSTRUCTOR    COURSE  CLASIZE  CONV  HRS/CONV  TOT HRS  AVAIL HRS
----------    ------  -------  ----  --------  -------  ---------
BROOKS         510G      4       6     20.0     120.0
               536K      5      50      6.7     335.0
                                                ------
                                       TOT =    455.0     1042

BROWN          510V      3      12     30.0     360.0
               536K      5      50      6.7     335.0
                                                ------
                                       TOT =    695.0     1041

DORSEY         536K      5      50      6.7     335.0     1042

HARRISON       510W      1      24     18.0     432.0     1042

HUNT           461V      1      12     42.0     504.0     1042

OBERLE         5698      7       6     75.0     450.0     1002

PAUL           510G      4       6     20.0     120.0
               536P      4      12     24.0     288.0
                                                ------
                                       TOT =    408.0     1042

ROHLFING       5107      4      24     15.0     360.0     1042

SPARKES        5107      4      24     15.0     360.0     1042

STEWART        5107      4      24     15.0     360.0     1042

STREIT         5107      4      24     15.0     360.0     1042

WAGNER         5698      7       6     75.0     450.0     1042

WARD           510G      4       6     20.0     120.0
               536P      4      12     24.0     288.0
                                                ------
                                       TOT =    408.0     1042
```

i) The final step of the SCRR operational test is to reset the SCRR software so that model input data are again computed from the DOTS data base files. This is accomplished by typing:

TESTOFF

followed by a carriage return. The system will respond with the time-of-day. Then type:

TESTREQO

followed by a carriage return. The system will respond with the time-of-day.

SCRR MODEL OPERATIONAL TEST PROCEDURE SUMMARY

Keyboard Entry	Operator Action Required
SCRRTEST	None
SET CORE 320	None
SCRR	Respond to Program Queries
P SCRR OUTPUT	Review Output for Accuracy
ASSIGN	None
P ASSIGN LISTING	Review Output for Accuracy
MODAVAIL	Respond to Program Queries
SCRR1	None
P SCRR OUTPUT	Review Output for Accuracy
FIXCONV	None
SCRR1	None
P SCRR OUTPUT	Review Output for Accuracy
TESTREQ	None
REQMT	Respond to Program Queries
ASSIGN	None
P ASSIGN LISTING	Review Output for Accuracy
TESTOFF	None
TESTREQO	None

SECTION V

TRAINING PROCESS FLOW MODEL

TPF MODEL ARCHITECTURE

The objectives of the Training Process Flow model are:

a. To provide training management with an ability to assess the effects upon the training system of projected changes in:

- Demand
- Scheduling
- Capacities

b. To develop model output data formats that provide high informational content to training management, so that effective decisions can be made for maximizing the utilization of training complex resources.

The TPF model is capable of assessing the impact of changes in certain input characteristics at the course level, and of showing the effects of these changes at the school and complex levels. Some examples of the course modifications which can be entered into the TPF model are:

a. Annual demand

b. Class capacity

c. Annual number of convenings

d. Course length

e. No-show rates

f. Student failure rate

g. Student setback rate

The model is also capable of assessing the effects of modifications to all courses at a training center, such as might be caused by a change in policy or planning. Examples of 'across-the-board' modifications that may be examined using the TPF model are:

a. Changes in annual demand by a fixed percent of all years of the run

b. Changes in demand on an annual basis; e.g., a growth of 10% per year in demand for each year of the run

c. Changes in the overall center no-show rate

d. Changes in convening frequencies for all courses by a fixed percentage

e. Elimination of all setbacks

f. Introduction of a longer teaching day (result is reduction of course lengths for AOB purposes).

This 'across-the-board' capability is important to the user as the model will only make logical (or rational) changes. That is, fractional course convenings are not allowed, lengths are corrected to multiples of days (or half days by option), and lengths are automatically adjusted for weekend days, without the need for user awareness.

The final output effects of the model are measured in terms of:

a. Average-on-board (AOB)

b. Utilization

c. Throughput

d. Backlog (including average wait time).

Intermediate effects available as model output include:

a. Pass/fail rates

b. Setback rates

c. No-show rates.

MODEL DESCRIPTION The TPF model is an aggregate flow model designed to project the effect on course, school, or training center throughput of changes in demand, capacities, or scheduling. An overview of the TPF system is shown in Figure V-1.

The TPF model will accept data from two sources; first, from the unloaded DOTS Master or Scratch data base, and secondly from data created by a program within the TPF system. This dual input capability is important to the user. The DOTS data base interface allows the user to analyze projections based on the current operational plan, including the latest revisions. The capability of modifying this data base allows the testing of alternate plans within the overall system. The alternate input allows the studying of several alternate plans, without the need to update the data base.

Any input parameter to the model can be considered a variable for manipulation to achieve the desired end results. Any course length, capacity, schedule, demand, or attrition rate can be modified for detailed analysis. The model also allows the operation of a course with one set of characteristics for part of

TPF MODEL - SIMPLIFIED SYSTEM FLOW

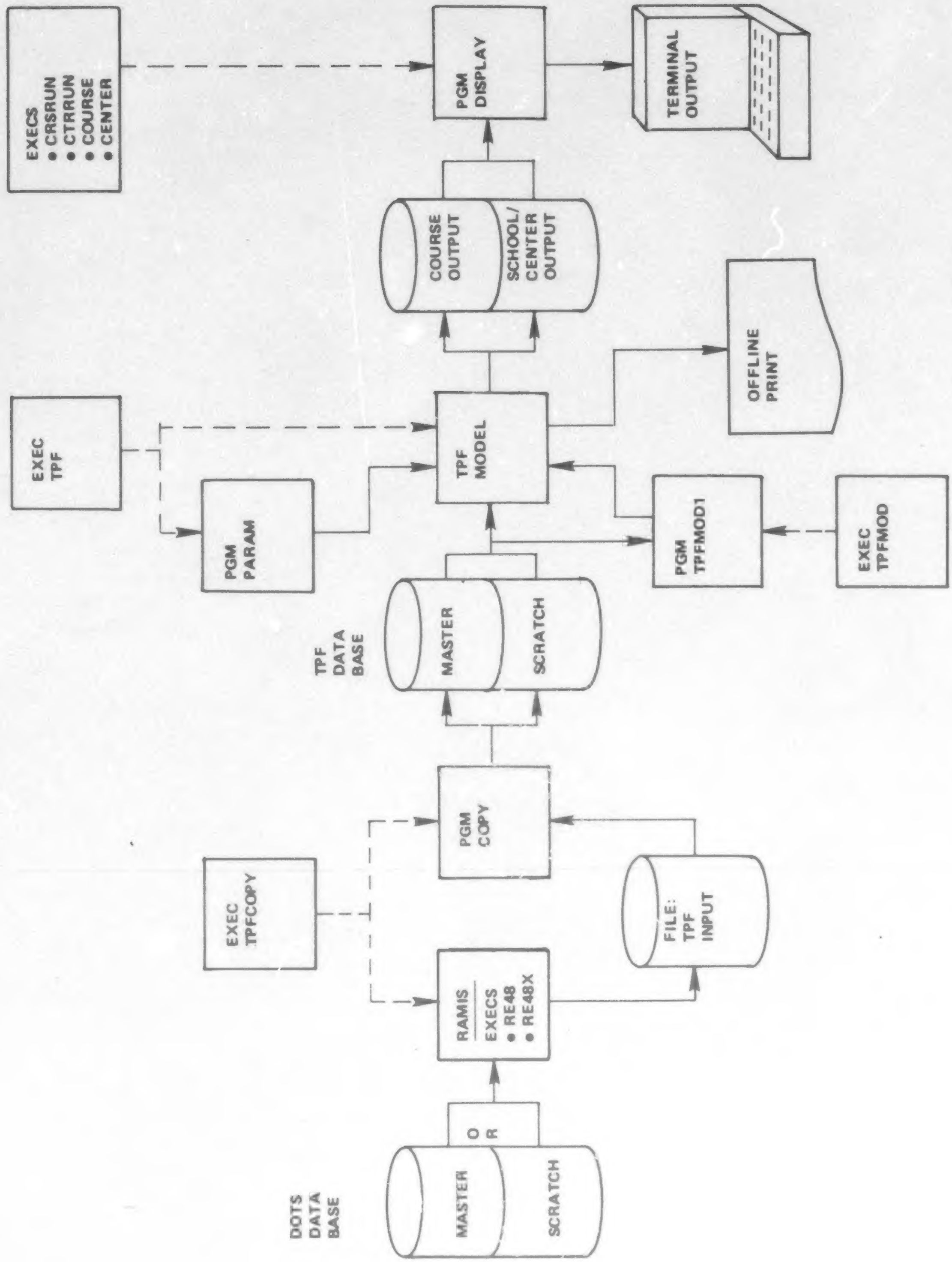

DOTS
DATA
BASE
MASTER
SCRATCH
O
R
RAMIS
EXECS
● RE48
● RE48X
EXEC
TPFCOPY
FILE:
TPF
INPUT
PGM
COPY
TPF
DATA
BASE
MASTER
SCRATCH
PGM
PARAM
EXEC
TPF
TPF
MODEL
PGM
TPFMOD1
EXEC
TPFMOD
OFFLINE
PRINT
COURSE
OUTPUT
SCHOOL/
CENTER
OUTPUT
EXECS
● CRSRUN
● CTRRUN
● COURSE
● CENTER
PGM
DISPLAY
TERMINAL
OUTPUT

FIGURE V-1

a model run, and an entirely different set of characteristics for the remainder of the run.

The design of the TPF model is such that it might be termed a front-end loaded model. That is, all schedule and demand conditions for a course are loaded at the beginning of the year, and the model then projects the resultant conditions for the remainder of the year. Likewise, the basic model projects, rather than predicts. The model itself is a true simulation, or mathematical representation of the mechanics of the overall scheduling function of the center. All major functions that affect student flow are modeled to a detail similar to the actual operations at the center, which include quota control, BUPERS detailing, scheduling, failures, and setbacks. The model outputs, however, can be predictive if the inputs themselves are predictive. To use the model, for decision-making purposes, the user must input his predictions of demands, schedule changes, new courses, etc., and the model then projects the annual throughputs, failures, AOB's, and such, based on these predictions. Likewise, a simulation model is not an optimization model; the large number of variable input parameters precludes this. The user can manipulate the model inputs to achieve optimal results. Figure V-2 shows the logical flow of the TPF model and is detailed by subroutine. A further description of the logic of the TPF model may be found in the programmers guide.

SUPPORT PROGRAMS. The TPF model is designed to be operated as a stand-alone model, using data generated internally, or in conjunction with the DOTS data base system. Support programs are written to provide the user the flexibility of either (or both) modes of operation. The major components of the support programs fall into three general categories.

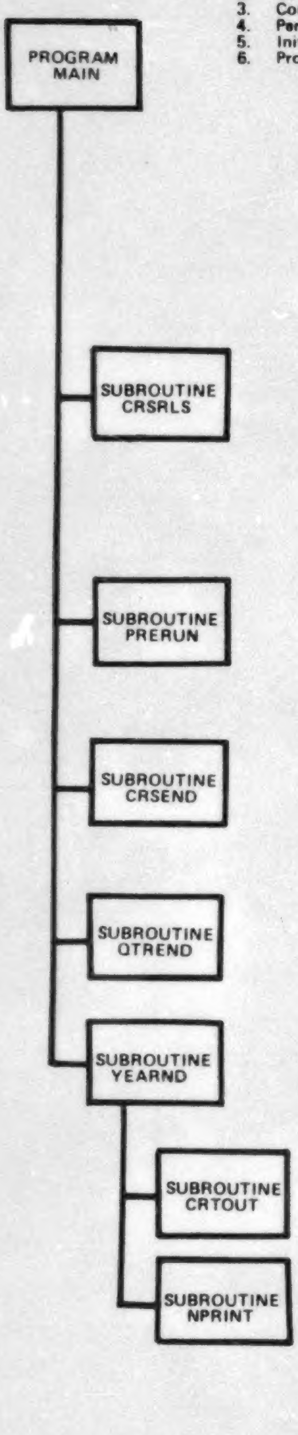
a. Data base interface

b. 'What If' capability

c. Output report display

Data Base Interface. The TPF model provides for two levels of access to the DOTS data base. Access is provided to the Course Master file for baseline data, and to the Course Scratch file for selected data or courses that have been modified using data base procedures. Program and executive TPFCOPY are used to access the Master or Scratch files and to format the data in a form acceptable to the TPF model. This method of access has been chosen for three reasons. First, once the TPFCOPY support program has been run, the data unloaded are available to the TPF model for multiple runs, freeing the data base system for other users. Secondly, the Scratch file can be accessed by both the TPF model and the SCRR model, allowing both models to study the training center data for the test condition. Finally, a user familiar with RAMIS will be able to form Scratch files from the Master data base in almost any form or condition imaginable, allowing the TPF model to access this powerful tool. The TPF MASTER and TPF SCRATCH files created during this operation will remain intact until another TPFCOPY operation for the respective file is performed.

TPF MODEL FUNCTIONAL FLOW



PROGRAM MAIN

1. Read parameter card to determine operations.
2. Read Data-Edit for invalid or missing data (MSG to Printer).
3. Convert course lengths to weeks.
4. Perform "Across the Board" mods and rationalize.
5. Initialize student backlog.
6. Provide following control loops:
   A. Year
   B. Quarter (including init loop)
   C. Week - including:
      - Data to be used (FY, FY+1, or FY+2)
      - Rationalize change week and offset
      - Course release (according to matrix)
      - Course end calculation

SUBROUTINE CRSRLS

1. Called by MAIN if course is to be started.
2. Calls PRERUN if in 'init' mode to see if course should start.
3. If course is to start:
   A. Releases BUPERS students (level loaded) to class, regardless of over-booking.
   B. Adds local students (level-loaded) to backlog pool.
   C. Releases local students from backlog pool to class (up to local capacity).
   D. Calculates: NOSHOWS = LOCAL STUDENTS* NO SHOW RATE (fractional value carried to next convening).
   E. Substitute quotas to 10% of class capacity released if space available and course backlogged.
   F. Multiple convenings of same course up to 10 per week allowed.
   G. Totals calculated: utilization, convenings, capacity, no shows.

SUBROUTINE PRERUN

1. Inits model by setting up classes in session at model start.
2. Only starts those courses meeting above criteria.
3. No pools, backlogs, or totals affected.

SUBROUTINE CRSEND

1. Called by MAIN if course to end in week being calculated.
2. Calculates failures as: FAIL = UTIL * PCT FAIL
3. Adjusts AOB for early disenrollment of failing students.
4. Fractional failures carried forward to next convening.
5. Calculates setbacks as a percentage of failures if there are other sessions of course are running and course length is more than 3 weeks. Adjusts AOB for setback.
6. Totals calculated: Pass, fail, setback, AOB, student days.

SUBROUTINE QTREND

1. Adjusts AOB and student days for courses that span quarters.
2. Saves quarterly totals for 'pool' data (backlog, failures, no-shows).
3. Carries forward fractional students from pool to next quarter.

SUBROUTINE YEARND

1. Calculates annual totals.
2. Initializes & zeros carry-over elements for multi-year runs.
3. Calculates course, school, & center totals for reports keyed.
4. Calls appropriate report generator routines.

SUBROUTINE CRTOUT

- Provides center, school, & course reports in a 79 column format for display terminal output.

SUBROUTINE NPRINT

- Provides center, school, & course reports in a 130 column format for line printers or 2741 terminals.

FIGURE V-2

'What If' Support. The 'what if' capability of the model is what allows the TPF system to be a useful tool. The 'what if' capability is supported in three places within the DOTS/TPF system. First, RAMIS can be used to create, modify, or select data to form the Scratch data base that can be used as an input to the TPF model (see Section II, this volume). Secondly, program TPFMOD allows the user to create courses or modify data for existing courses to allow rapid examination of a course under different conditions. Finally, the TPF model has the built-in capability for studying certain modifications to all courses for a run.

TPFMOD is a specialized program intended to allow a terminal user conversational access to data stored in the TPF MASTER or TPF SCRATCH data files created by the COPY operation. The program has two functions. First, the user is allowed to copy all data for any course into a temporary file and modify any data element(s) desired. Secondly, the user can create any new course in this temporary file, using prompting routines specifically requesting only that information required to run the course using the TPF model. Since the program is written specifically to support TPF 'what if' capability and is not general purpose, operation is simple, straightforward, and fast. Two features add to the flexibility of this program. First, the same course may be copied and modified several times, allowing examination of the same course under several different conditions in the same run. Secondly, courses may be created, and the temporary file generated may be concatenated with the Master or Scratch file, allowing the examination of the effects of the addition of the course on the overall training center.

Program PARAM interfaces the user with the 'what if' capability internal to the TPF model. The model allows the user to provide multiplier overrides for all parameters used for calculation within the TPF model. For example, the user may implement a 10% increase in demand for all courses by entering 1.10 as the demand parameter using the support program PARAM, called by TPF. As another example, a training manager could study the effect of eliminating all no-shows by entering 0.00 as the no-show parameter, again using the support program PARAM, called by TPF. This program also allows the user to specify a specific school or course to be executed for a run, bypassing all other courses. Use of this program for 'what if' questions may be advantageous to the user for the following reasons. First, this program is the only simple method of testing the effects of decisions to all courses as it applies all modifications universally. Secondly, this program rationalizes all modifications; that is, it allows only logical modifications to be made. For example, a course that meets once annually will still meet once per year despite a general ten percent cut in convening frequencies, while an eight week long course should have both teaching days and weekend days reduced for a twenty percent cut in length. This program, then, allows the training manager to apply general policies to all courses, maintaining logical conditions for all courses. Finally, because of this the user can test the value of a general action that must be taken to achieve a desired result, (e.g., what general value all convening frequencies must be cut to achieve a center-wide goal of a ten percent reduction).

Display Support. Output generated by the TPF model may be directed to off-line printers or terminal displays. The use of off-line printers indicated when large amounts of data are to be displayed or base line runs intended to be retained are generated. A display support program was developed to allow the user to browse through the data files created by the TPF output, displaying only those data required. Course data created can be called by CDP number, while all output, including summary reports, may be called by page number. A LOOK option allows the user to look at the first line of each page in the file to ascertain if display of the entire page is desirable.

INPUT PARAMETERS DESCRIPTION

All baseline data for the TPF model are stored in the DOTS Master data base course file. Section II of this volume describes the procedures for loading and updating these data. A listing of these data elements and their format is shown in Table V-1. The data used as input to the TPF model are compatible with NITRAS data elements except for those elements where data unique to the center under study are required. The data elements are:

a. SCH - This is a four digit code to describe the school within the training complex to which the course is assigned. Currently 4 descriptive characters such as AC&R for the Air Conditioning and Refrigeration school are used for this code. A change using the NITRAS DEPT CODE is anticipated. This code is used as the sort key for data base operations.

b. CDP - The CDP code is the unique 4 position alpha numeric identifier code for each course taught in the Navy (from NITRAS).

c. DEL - The delete flag is set automatically by the data base maintenance routines and is used to signify courses in the file that have either been disestablished or are not yet taught at the center.

d. CTLG - This is the 10 position alpha numeric CIN code used in the Catalog of Navy Training Courses (CANTRAC). This code is identical for the same course taught at different locations (from NITRAS).

e. CRS - This is the 16 character name of the course (Activity Short Name from NITRAS).

f. CONV1 - This is the annual number of convenings for the course planned for the current fiscal year (from NITRAS).

g. LEN1 - This is the length in days including weekend days, of the course for the current fiscal year (from NITRAS).

h. CAP1 - This is the current limiting capacity for the course (from NITRAS).

i. BCAP1 - This is the current number of seats in the course allocated to BUPERS or other agencies and not available for local quota control (locally obtained).

j. DMD1 - This is the current total anticipated annual demand for the course (from NITRAS).

k. BDMD1 - This is the current annual demand for the course for students detailed by BUPERS and other agencies (locally obtained).

RAMIS DUMP FORMAT (MASTER OR SCRATCH)

± EBCDIC RECORD LENGTH 80 CHARACTERS

FIELD NAME	FORMAT	LENGTH
SCH	A 4	4
CDP	A 4	4
DEL	A 1	1
CTLG	A 10	10
CRS	A 16	16
CONV1	I 3	3
LEN1	F4 .1	4
CAP1	I 3	3
BCAP1	I 3	3
DMD1	I 5	5
BDMD1	I 5	5
OFST	I 2	2
PFAIL	F5 .3	5
NADIS	F5 .3	5
NOSHOW	F5 .3	5
SETB	F5 .3	5
	X	0
BKLG	I 4	4
JNO	A 4	4
CONV2	I 3	3
LEN2	F4 .1	4
CAP2	I 3	3
BCAP2	i 3	3
DMD2	I 5	5
BDMD2	I 5	5
CHWK2	I 3	3
CONV3	I 3	3
LEN3	F4 .1	4
CAP3	I 3	3
BCAP3	I 3	3
DMD3	I 5	5
BDMD3	I 5	5
CHWK3	I 3	3
PAOB	I 4	4
AFAIL	F5 .3	5
PRTY	I 2	2
CTYPE	A 2	2
PNEC	A 4	4
UCAP	I 3	3

TABLE V-1

l. OFST - Offset is a model unique value and is used to modify the schedule matrix to allow the model to convene courses with low convening frequencies (3 or less) in the proper quarters. The scheduler matrix normally schedules the first convening of a course for the first or second week of the model run. An offset of 26 would change the first convening to the 27th week of the model (3rd quarter). Use of offset is optional and does not affect annual totals.

m. PFAIL - This is the current historical (last 12 months) failure rate for the course (from NITRAS).

n. NADIS - This is the historical (last 12 months) non-academic disenrollment rate for the course (from NITRAS).

o. NOSHOW - This is the historical (last 12 months) no-show rate experienced by the course. This rate is determined as the percentage of those scheduled for the course that did not attend or cancel (locally obtained).

p. SETB - This is the historical (last 12 months) set back rate for the course. This value is not used for model calculations (from NITRAS).

q. BKLG - This is the length in weeks that a student must wait for a local quota for a course. Optionally, the model may be configured to accept backlog in students rather than weeks. However, usage must be consistent (locally obtained).

r. JNO - This is the obsolete 4 position J number used as an identifier for courses. It is retained as a cross-reference to statistical data on file. New or modified courses do not have a J number (not updated).

s. CONV2 - Same as CONV1 but for first out year (*).

t. LEN2 - Same as LEN1 but for first out year (*).

u. CAP2 - Same as CAP1 but for first out year (*).

v. BCAP2 - Same as BCAP1 but for first out year (*).

w. DMD2 - Same as DMD1 but for first out year (*).

x. BDMD2 - Same as BDMD1 but for first out year (*).

y. CHWK2 - This term is used to force the week in which the first out year values will be used for a course. During normal processing the first out year values will be activated in the 53rd week. A non-zero entry in CHWK2 will override this, and the value entered will be used.

(*) NOTE - For items marked (*) the model will default and use current (initial) values if the data for the field is zero or missing. However, use of CHWK2 will override this and the user must provide all first out year data.

z. CONV3 - Same as CONV1 but for second out year (**).

aa. LEN2 - Same as LEN1 but for second out year (**).

bb. CAP3 - Same as CAP1 but for second out year (**).

cc. BCAP3 - Same as BCAP1 but for second out year (**).

dd. DMD3 - Same as DMD1 but for second out year (**).

ee. CHWK3 - Same as CHWK2 but for second out year data.

(**) NOTE - For items marked (**) the model will default and use current (or first out year values if CHWK2 is used) if the data for the field is zero or missing. However, use of CHWK3 will override this and the user must provide all second out year data.

ff. PAOB - This is the planned AOB for the course and is not used in model computations (from NITRAS).

gg. AFAIL - This is the planned (or allowed) failure rate for the course and is not used in model computations (from NITRAS).

hh. PRTY - This is the 2 digit course priority code (from NITRAS).

ii. CTYPE - This is the 2 position type code for the course (i.e., fleet, A, C, etc.) (from NITRAS).

jj. PNEC - This is the primary NEC code for those courses granting NEC's (from NITRAS).

OUTPUT PARAMETERS DESCRIPTION

The primary TPF model output is the yearly course summary format, shown in Figure V-3a. This format is broken into two parts; the upper portion which gives a synopsis of the input data, and the lower position which tabulates the fiscal year projections based on the input data. The data elements on the top have been previously described. The following discussion will, therefore, concentrate on the yearly course projections.

a. FORMAT - The output is broken into 4 quarters of equal length (13 weeks). The first quarter is assumed to start 1 July of the fiscal year. This is significant as the model will not run courses during the Christmas period, which is assumed to be the last week of the second quarter and the first week of the third quarter. Annual totals as well as percentages, are printed for applicable data elements.

b. NUMBER OF CONVENINGS - A convening date is defined as the day of the first class for a course section. Thus, a convening begins accumulating within a quarter on the day it begins. For example, if a course with a length of 11.0 weeks convened in the 13th week of the 1st quarter, the convening will be counted in the first quarter, even though the bulk of the student AOB falls in the second quarter. A

```
0284     FINANCIAL MGMT         --SCHEDULE DATA--    FY    FY+1    FY+2   CRS BACKLOG
                                ANNUAL CONVENINGS   13       0       0     # STU   32
SCHL JNO  CATALOG NO  NEC       COURSE LENGTH DYS  5.0     0.0     0.0     # WKS    5
S/DA 6552 A-551-0056            COURSE CAPACITY     25       0       0
                                BUPERS CAPACITY      0       0       0    FY+1 WK   0
P AOB  PFAIL  TYPE   PRTY       ANNUAL DEMAND      150     180     180    FY+2 WK   0
  2.0   7.0%   F1     31        BUPERS DEMAND        0       0       0    OFFSET    0

                                    QUARTERLY PROJECTIONS
              ! 1 QR FY 75 ! 2 QR FY 75 ! 3 QR FY 75 ! 4 QR FY 75 ! ANNUAL TOTAL
--------------!------------!------------!------------!------------!---------------
# CONVENINGS!   4 !        !   3 !        !   3 !        !   3 !        !   13 !
CRS CAPACITY! 100 !        !  75 !        !  75 !        !  75 !        !  325 !
UTILIZATION !  67 ! 67.0%!  30 ! 40.0%!  29 ! 38.7%!  30 ! 40.0%!  156 ! 40.0%
NO SHOWS    !  11 ! 14.1%!   5 ! 14.3%!   5 ! 14.7%!   5 ! 14.3%!   26 ! 14.3%
BAKLOG #/WKS!   0 ! 0 WKS!   0 ! 0 WKS!   0 ! 0 WKS!   0 ! 0 WKS!    0 ! 0 WKS
STU DAYS/AOB! 335 !  3.7 ! 150 !  1.6 ! 145 !  1.6 ! 150 !  1.6 !  780 !  2.1
            !     !      !     !      !     !      !     !      !      !
TOTAL PASS  !  62 ! 92.5%!  27 ! 90.0%!  25 ! 86.2%!  26 ! 86.7%!  140 ! 89.7%
TOTAL FAIL  !   5 !  7.5%!   3 ! 10.0%!   3 ! 10.3%!   3 ! 10.0%!   14 !  9.0%
SETBACK ACAD!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!    0 !  0.0%
DISENROLL NA!   0 !  0.0%!   0 !  0.0%!   1 !  3.4%!   1 !  3.3%!    2 !  1.3%
----------------------------------------------------------------------------------
```

```
                     TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                              SCHOOL CODE  COMM

COMM  SCHOOL SUMMARY

              ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
--------------!------------!------------!------------!------------!---------------
# CONVENINGS!    47!       !    41!       !    44!       !    41!       !   173 !
CRS CAPACITY!   683!       !   589!       !   645!       !   589!       !  2506 !
UTILIZATION !   602! 88.1%!   447! 75.9%!   441! 68.4%!   383! 65.0%!  1873 ! 74.7%
NO SHOWS    !    77! 11.3%!    68! 13.2%!    64! 12.7%!    58! 13.2%!   267 ! 12.5%
BAKLOG #/WKS!   181! 7 WKS!    90! 6 WKS!    46! 5 WKS!    27! 3 WKS!    27 ! 3 WKS
STU DAYS/AOB!  2810!  30.8!  2052!  22.5!  2051!  22.5!  1661!  18.2!  8574 !  23.5
            !      !      !      !      !      !      !      !      !       !
TOTAL PASS  !   588! 97.7%!   434! 97.1%!   430! 97.5%!   372! 97.1%!  1824 ! 97.4%
TOTAL FAIL  !    14!  2.3%!    13!  2.9%!    11!  2.5%!    11!  2.9%!    49 !  2.6%
SETBACK ACAD!     0!  0.0%!     0!  0.0%!     0!  0.0%!     0!  0.0%!     0 !  0.0%
DISENROLL NA!     0!  0.0%!     0!  0.0%!     0!  0.0%!     0!  0.0%!     0 !  0.0%
----------------------------------------------------------------------------------
```

```
                     TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                    ** TOTALS FOR  FLEET TRAINING CENTER **

FTC - NORVA  SUMMARY

              ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
--------------!------------!------------!------------!------------!---------------
# CONVENINGS!   759!       !   695!       !   678!       !   720!       !  2852 !
CRS CAPACITY!23908!       !22514!       !21648!       !24265!       ! 92335 !
UTILIZATION !16209! 67.8%!12559! 55.8%!11825! 54.[illegible]%!12918! 53.2%! 53511 ! 58.0%
NO SHOWS    ! 2423! 13.0%! 1974! 13.6%! 1861! 13.[illegible]%! 2082! 13.9%!  8340 ! 13.5%
BAKLOG #/WKS! 3432! 9 WKS! 2676!11 WKS! 2325!13 WKS! 2172!15 WKS!  2172 !15 WKS
STU DAYS/AOB!92066!1008.9!73855! 809.4!71520! 78[illegible].8!73931! 810.2!311372 ! 853.1
            !      !      !      !      !      !      !      !      !       !
TOTAL PASS  !15686! 96.8%!12069! 96.1%!11348! 96.0%!12393! 95.9%! 51496 ! 96.2%
TOTAL FAIL  !  417!  2.6%!  375!  3.0%!  365!  3.1%!  400!  3.1%!  1557 !  2.9%
SETBACK ACAD!   36!  0.2%!   27!  0.2%!   27!  0.2%!   30!  0.2%!   120 !  0.2%
DISENROLL NA!  106!  0.7%!  115!  0.9%!  112!  0.9%!  125!  1.0%!   458 !  0.9%
----------------------------------------------------------------------------------
```

FIGURE V-3 SAMPLE COURSE, SCHOOL, AND CENTER REPORTS

course convening is based on the current week, offset, and change week.

c. COURSE CAPACITY - This represents a total of the limiting course student capacity on the day each course was released, by quarter. On the day a course convenes, the model tests if this convening is prior to or after a schedule change date, and the current capacity is used.

d. UTILIZATION - This is the total number of class seats occupied on the day the course convened. That is, it is a total of the local quotas granted, minus no-shows, plus BUPERS input, plus substitute quotas. This algorithm does make allowance for overbooking of critical courses.

e. NO-SHOWS - This is an historical average of students not showing up for the course who had previously been granted quotas. Only that portion of students scheduled through local quota control is counted in the no-show figure. Students scheduled from BUPERS do not contribute to no-shows in this model as: (1) they are usually under TAD orders; and (2) the school has no record of these students until they arrive. No-shows also are not derived from substitute quotas for obvious reasons. Based on this use of no-show rates, it is important that the historical no-show rate entered in the model be based on the sum of no-shows and utilization, and not on utilization alone.

f. BACKLOG - Backlog is defined as the time a student must wait for a confirmed quota in a course that is booked. The backlog printout is a snapshot of the actual backlog on the last day of the quarter. The model input portion of the format gives the initial, or beginning backlog, while that contained in the annual totals column is the ending backlog, which is identical to the 4th quarter backlog. Backlog is entered in weeks and is converted to students who hold quotas. The output report shows backlog in both weeks and numbers of students.

g. STUDENT DAYS - Student days are the total, by quarter, of the number of days each student has spent in a course that quarter. Thus, it is possible to show student days in a quarter that had no convenings. Students set back to a course do not count as utilizations, but the student days spent in that convening are totaled. Two methods of calculating student days are available in the TPF model, with the method decided by the value of AOB constant entered. If this constant is less than 300, student days is the total of class days times students, adjusted for setbacks and quarters. If the AOB constant is 300 or greater, student days include weekend days for courses longer than one week. If a course spans two quarters, the weekend days for that week the span occurred are charged to the quarter in which the course convened. AOB is the student days divided by the AOB constant, which is a model input parameter. This AOB is multiplied by 4 for the quarterly outputs.

h. PASS/FAIL, ETC. - These are historical pass/fail and non-academic disenrollment percentage rates. Updates to these factors require additional statistical analysis of current data. Academic setbacks are hard coded into the logic of the model and are based on the fail percentages. The criteria for setbacks are discussed under the logic design portion of this section.

School and center summary reports are also available as outputs of the TPF model. The data presented are a summary, by school code or by center, of the data presented in the individual course reports. Input data are not displayed for summary reports. The backlog wait time in weeks presented in the summary reports is the average wait time only for those courses having a backlog. Samples of the course, school, and center formats are presented in Figure V-3b and V-3c.

TPF MODEL SYSTEM OPERATIONAL PROCEDURES

GENERAL SYSTEM FLOW. The Training Process Flow system can run using data either from the unloaded DOTS data base, or any combination of courses from the unloaded data base, modifications of these courses, or new courses entered by the user. It is assumed that the user is familiar with the data base operating procedures, including modification of these data to produce a Scratch data base.

The basic flow of the TPF model system was shown in Figure V-1. The model can be run under baseline conditions (with the output usually saved) or with the input data modified in order to study courses under various conditions. These input data can be modified at three points in the TPF system. First, all course data elements can be modified using facilities of the data base update/maintenance routines. The user is directed to Section II, DATA BASE MAINTENANCE, for a full description of the facilities available. Use of these facilities is recommended when a large number of changes are to be made, especially if the changes are to be made only if certain select criteria are met; e.g., modify the convening frequency of a course only if the length is greater than two weeks. Secondly, data can be modified using the facilities of the TPF support program TPFMOD which allow selection, revision, and creation of courses for direct input to the TPF model. Use of program TPFMOD is indicated when the number of changes is small, the same course is to be studied under several different configurations, or new courses are to be studied. Finally, capability exists within the TPF model to run only selected courses or schools and to make across-the-board modifications, such as reducing the no-show rate for all courses by 10 percent. These modification features can be used individually, or in any combination, to allow the user a flexible, easy to use model system.

Data Base Interface. All baseline data used as input to the TPF model are stored in the DOTS data base. These data are updated periodically so as to be current with actual conditions and should be considered the master source file. However, the TPF model cannot access these data directly. In order to be accessible to the TPF model, the course file must be unloaded using procedures contained in this section. Prior to this process, the unloaded data may be modified, forming a Scratch data base, using data base operating procedures. It is necessary to copy these data to the TPF system. If unmodified data are to be used as the TPF Master data base, enter:

```
TPFCOPY MASTER
```

If the message:

DEVICE ALREADY IN USE (E00008)

appears, the DOTS data base sign-on code is already in use, and the user must wait until it is free before proceeding.

If the message:

TPF MASTER- NNN COURSES COPIED

is displayed, the data base was successfully copied and will be available as the baseline or master input to the TPF model system.

If it is desired to copy a Scratch data base for model manipulation, enter:

TPFCOPY SCRATCH

The error message is the same, and if a successful copy is completed, the message:

TPF SCRATCH - NNN COURSES COPIED

is displayed. During the data base unload operation, core storage must be set to 320K. If this is not done, the system will automatically set core to 320K. However, this causes the executive to terminate and the user must restart the copy operation.

TPF Course Create/Modify Program. The TPF model can execute using the TPF Master or Scratch data base directly, or program TPFMOD can be invoked to further modify the data in either the Master or Scratch data base, including the addition of new courses. This program should be used only if modifications to individual courses are required or new courses are to be entered. Only those courses copied or created will appear as TPF input if this program is invoked. If the Master TPF data base is to be used as reference, enter TPFMOD MASTER to invoke the program. If the Scratch data base is to be used, enter TPFMOD SCRATCH. The message:

TPF CREATE/MODIFY- ENTER NEW OR COPY

will be displayed.

Options. Three basic OPTIONS exist in the TPFMOD program; NEW, COPY, and MOD.

NEW - The NEW option signifies that a new course is to be created. The program prompts for the entries necessary to create a new course. Upon completion of the prompted data entry, the program allows the user to add further data or to modify data already entered. Once DONE is entered, the creation of the course terminates and the system requests the next user option.

COPY - The COPY option allows the user to copy any course from the Master (or Scratch) data base for entry to the TPF model. The CDP number of the course must be entered and the message:

CDP AAAA COPIED- ENTER DONE OR MOD

will appear if the course was found in the file and copied. The message:

AAAA +NOT IN FILE - RETRY OR ENTER DONE

appears if the requested CDP was not in the file.

Once copied, the user can modify any course data element or proceed to any other TPFMOD option. It is possible, using the COPY option, to have multiple copies of the same course in the run file, each modified to study different configurations during a model execution.

MOD - The MOD option allows the user to modify data stored in the run file during this execution. The MOD option requests:

ENTER CDP

If a carriage return is entered, the last course copied or created will be modified. If a CDP code is entered, the CDP will be modified. If multiple copies of a CDP are in the file, only the first entered will be available for modification. If the CDP number entered is not in the file, the message:

XXX INVALID- RETRY

will be displayed.

If the CDP is located, the message

MODIFY DATA FOR CDP XXXX

will be displayed.

At that time, any of the 36 TPF fields may be modified. A list of the fields and their formats appears in this section, and the list may be displayed on the terminal by entering HELP. To modify a field, the user should enter the field name. The system then responds:

ENTER FIELDNAME (TYPE LEN)

The data entered will be 'echoed' if accepted, or an appropriate error message will be displayed. Any number of fields may be modified in this mode. Enter DONE or QUIT to exit this mode.

Fields and Formats. The 36 fields that may be modified using program TPFMOD are identical to those noted in the section describing the TPF model. The command HELP may be entered any time during execution for display of the fields. The fields available for modification are:

LIST	FIELD NAME	ALIAS	TYPE	LENGTH
1	CDP	CDP	A	4
2	CTLG	CTLG	A	10
3	CRS	CRS	A	16
4	CONV	CONV1	I	3
5	DAYS	LEN1	F	4.1
6	CAP	CAP1	I	3

LIST	FIELD NAME	ALIAS	TYPE	LENGTH
7	BCAP	BCAP1	I	3
8	DMD1	DMD1	I	5
9	BDMD1	BDMD1	I	5
10	OFST	OFST	I	2
11	PFAIL	PFAIL	F	5.3
12	NADIS	NADIS	F	5.3
13	NOSHOW	NOSHOW	F	5.3
14	SETB	SETB	F	5.3
15	BKLG	BKLG	I	4
16	JNO	JNO	A	4
17	CONV2	CONV2	I	3
18	LEN2	LEN2	F	4.1
19	CAP2	CAP2	I	3
20	BCAP2	BCAP2	I	3
21	DMD2	DMD2	I	5
22	BDMD2	BDMD2	I	5
23	CHWK2	CHWK2	I	3
24	CONV3	CONV3	I	3
25	LEN3	LEN3	F	4.1
26	CAP3	CAP3	I	3
27	BCAP3	BCAP3	I	3
28	DMD3	DMD3	I	5
29	BDMD3	BDMD3	I	5
30	CHWK3	CHWK3	I	3
31	PAOB	PAOB	I	4
32	AFAIL	AFAIL	F	5.3
33	PRTY	PRTY	I	2
34	CTYPE	CTYPE	A	2
35	PNEC	PNEC	A	4
36	SCH	SCHOOL	A	4

The program prompts for data during new course generation or field modification in the form:

```
ENTER FIELDNAME (TYPE LEN)
```

where FIELDNAME is the abbreviated name for the field, TYPE contains an A for alphanumeric data, I for numbers with no decimal, or F for data with a decimal point, and LEN is the length of the data entry (number of characters). Appropriate error messages will be displayed if the entry is of the wrong type or invalid for the field in question.

TPFMOD Commands. The following commands are available to the user of the TPFMOD program:

QUIT
STAT
NEW
DONE
SHOW
MOD
HELP
COPY

The function of the COPY, NEW, and MOD commands has already been described. The functions of the other commands are as follows:

QUIT - The QUIT command terminates execution of the TPFMOD program. The user is then asked whether the run data set created is to be saved. An N reply will terminate the program without saving the created data set, while a Y reply will over write the previous TPF run data set. At this point, any of the other commands are available to reenter the program.

DONE - The DONE command terminates the current step in the program, and causes a return to the control portion of the program.

HELP - The HELP command allows the user to display a list of the valid TPF fields or valid system commands. The system returns to the point at which the HELP command was entered upon completion of this display.

STAT AAAA - The STAT command will display the status of field AAAA of the current course under consideration (course being modified or last course copied or modified). AAAA represents the field name abbreviation of the field to be displayed.

SHOW - The SHOW command displays all fields for the current course under consideration. An option exists with SHOW to display a single field by entering the field name when requested. A carriage return (with no entry) will cause all fields to be displayed. The system returns to the point at which the SHOW command was entered upon completion of this display.

TPF Model. All TPF model execution is under the control of the user and may be modified by the user at run time. Parameters that can be modified at this time include input data selection, output report generation, and modification of selected data elements.

The program is called by entering:

```
TPF xxxx yyyy
```

where:

xxxx is the data base to be used as the input data set. If this field is MASTER, the Master data base will be used for data input, if the field entry is SCRATCH, the Scratch data base, created by program TPFCOPY, will be used. This field should be TEST if output created by TPFMOD is to be used as input.

yyyy field is optional and it may contain the word SAVE. SAVE specifies that the output of this run should be stored in a save area. A blank or invalid entry will cause output to be directed to normal output areas. This option is normally used to preserve the results of baseline runs.

Control Fields. The following field options are available during this phase to control TPF execution. Default values are used for the first four fields if the entry is invalid or missing. The control fields and their use are:

INPUT - This field determines whether the input is to be from the TPF Master/Scratch data base or from the data created by the TPFMOD program.

A 10 in this field will cause the model to use data from the Master, Scratch, or TPFMOD data base, while a 5 indicates that the input is to be from card or tape. (Default 10)

FYR - Indicates the year to be printed as the first year of the model run; e.g., 1976. (Default 1975)

LYR - Indicates the last year of the model run. The difference between these years, plus 1, indicates the number of years to be projected, with a maximum of three. (Default 1975)

AOB - This indicates the number of days to be used in the AOB calculation and controls the method. The standard number to be used is 365 causing weekend days to be used in the calculation. If a figure less than 300 is used, weekend days will not be counted in AOB calculations. (Default 0365)

PRINT - A 0 or blank in this field will cause all output to be directed to data sets for terminal or CRT display. A 2 in this field will cause all output to be directed to the off-line printer, while a 1 in this field will cause both modes of output to be produced.

INIT - A 1 in this field will cause the model to initialize those courses in session at model start, while a 0 or blank will skip this initialization. The model should be initialized for all normal runs.

Data Fields. The following fields are available to modify input parameters for all courses during the model run, with no changes to any data base used. All inputs should be four characters in length including decimal points e.g., 1.25 or .931. Minus signs or alpha characters are not permitted.

FAIL - All failure rates are multiplied by the number entered to produce the new failure rate.

NOSHO - All no-show rates are multiplied by the number entered to produce new no-show rates.

DMD - All demands, both bureau and local, for all three years, are multiplied by the number entered.

TREND - All local and bureau demands for the second and subsequent years are multiplied by the number entered to represent trends; e.g., 10 percent growth per year.

CONV - All convening frequencies are multiplied by the number entered. Only whole number changes are allowed; fractional convenings are counted as the next higher number. A 0 in this field is ignored.

LEN - All lengths are multiplied by the number entered. Only half-day increments are allowed, and compensation is made for weekend days.

CAP - All capacities are multiplied by the number entered. Only whole number changes are allowed; fractional capacities are counted as the next higher number.

SETB - All setback rates are determined by using this number as the percentage of students failing that are candidates for setback. The model calculates actual setbacks only if courses are greater in length than two weeks and multiple convenings occur.

Report fields. A 1 in fields CRS, SCHL, or CTR will cause the respective course, school, or center reports to be produced, while a 0 will cause bypassing of these reports. All zeros in these fields will cause the model to cycle with no reports produced.

Select Fields. The following two fields can be used to select courses as input to the TPF model.

CDP - Only a course with the entered CDP number will be executed, with all others by-passed.

SCH - Only courses matching the school code entered will be executed, with all others by-passed.

TPF Operational Flow. Following entry of the command TPF xxxx, the message:

```
TPF MODEL - WANT INSTRUCTIONS (Y OR N)
```

will be displayed. If a Y is entered, the list of instructions and fields accessible will be displayed; if an N is entered, this step is by-passed. Next, the present run conditions are displayed, followed by the request:

```
ENTER RUN, QUIT, OR FIELD TO BE CHANGED
```

If RUN is entered, the model will execute under the present condition, while if QUIT is entered, execution will be by-passed. To activate any of the previously mentioned fields, enter:

```
          FIELDNAME    DATA
e.g.,       FAIL       .941
```

To deactivate a previously selected field, enter:

```
          FIELDNAME    DEACT
e.g.,       FAIL       DEACT
```

TPF Commands. The following commands are available during the execution of this program:

RUN - Causes the model to execute using the currently selected conditions.

QUIT - Causes termination of the program and by-passes model execution.

SHOW - Causes the current run condition to be displayed.

HELP - Causes the program instructions, fields, and formats to be displayed.

Output Display. Following a successful execution of the TPF model, the message:

```
END TPF EXECUTION
ENTER CTRRUN FOR CENTER FORMAT:  CRSRUN FOR COURSE FORMAT
```

will be displayed.

The program that displays these outputs uses page control, and displays a message at the beginning of the program as to the type of file and number of pages in the file.

If a school/center summary is to be displayed, enter CTRRUN (CENTER for SAVE option). When the display program requests the page number, enter either the page number to select the desired page or a 0, or carriage return to display the next page. The terminal will pause at the end of each page prior to the next entry.

If a course file is to be displayed, the user has the option to select pages by CDP or page number. To display the course file, enter CRSRUN (COURSE for SAVE option). The message:

```
COURSE FILE - SELECT BY CDP OR PAGE NO.
```

will be displayed. If a page number is entered, that page will be displayed, while a carriage return will display the next page. If CDP is entered, the system will ask for the CDP number to be displayed. If the CDP number entered is not in the file, an error message will be displayed.

To terminate the display program, enter DONE or QUIT.

Display Commands. The following commands are available during the display option:

QUIT - Terminate the display and exit.

DONE - Same as QUIT.

CDP - If a course file, allows page selection by CDP.

PAGE - Allows selection by page number. Optionally, the page number can be included in the page request.

LOOK NNN - Allows the user to look at the first line of page NNN.

TPF Output Formats. Figures V-3a, b, and c show samples of the course, school, and center formats produced by the TPF model.

OPERATIONAL EXAMPLE. The following problem will illustrate an application of the TPF model to aid training complex management in assessing the feasibility of meeting various objectives placed by the functional command. In this scenario, training management has been asked to:

a. Hold AOB for the complex at a near 800 level

b. Reduce the no-show rate to a 10% level

c. Release 7% of their instructor billets to the functional command

The first step in evaluating various strategies is to obtain a baseline run to establish current conditions. The use of the TPF model to accomplish this is shown in Figure V-4. The first step is to unload the current data base. To accomplish this core storage is set to the required 320K and then the command TPFCOPY MASTER is entered. (all user inputs are underlined in the following examples). The program executes and the verification message is displayed, indicating 135 courses have been unloaded from the master data base. The next step is to run the TPF model. The user enters TPF MASTER SAVE in order to use the master data base and to save the output for further reference. The Y response to the first program query by the user caused the listing of the fields available for modification; the usual response is N here. The display also shows that a course report is keyed as well as the center summary report. Only the summary report is required so the course report is deactivated. The next step is to verify run conditions, and if satisfied run the model. Following model execution CENTER is executed to display the results which are shown at the location of Figure V-4.

The current AOB is projected by the TPF base run is about 857. To meet the near 800 objective, two alternatives are available; refuse training or reduce the length of the training. To test the sensitivity of the system to a reduction in length, all courses will be reduced in length by 10%. To simulate the new no-show rate, the current rate must be cut by 20%. The operational steps to accomplish this are shown in Figure V-5. The Master data base need not be recopied as it is not modified by TPF runs. The first step then is to call the TPF model and enter the parameter overrides. Following execution CTRRUN is used to display the results obtained. By observation, it can be seen that the reduction in AOB can be achieved by a 10% reduction in course lengths. (In practice this might include shortening of some courses and extending the teaching day in others). The effects upon throughput and no-show rate can also be observed.

In order to achieve a reduction in instructor billets, a cut in convening frequency is one alternative. In the third part of this example (Figure V-6), a reduction in convening frequencies by 10% was attempted. However, the results of this effort show that the number of students backlogged increased to an unacceptable 8% level, the trend for the last quarter is increasing, and the wait time is increasing. The results of this run showed that a 10% reduction in convenings is not a feasible alternative.

In summary, this example shows an application of the TPF model to a practical problem. The training manager could rapidly test the effectiveness.

COPY MASTER DATA BASE

```
         SET CORE 320
CSS.212 09/23/75

12.23.51 TPFCOPY MASTER

TPF MASTER FILE BEING UPDATED
EXECUTION:
END TPF DB FILE UPDATE- 135 COURSES UPDATED
12.24.36
```

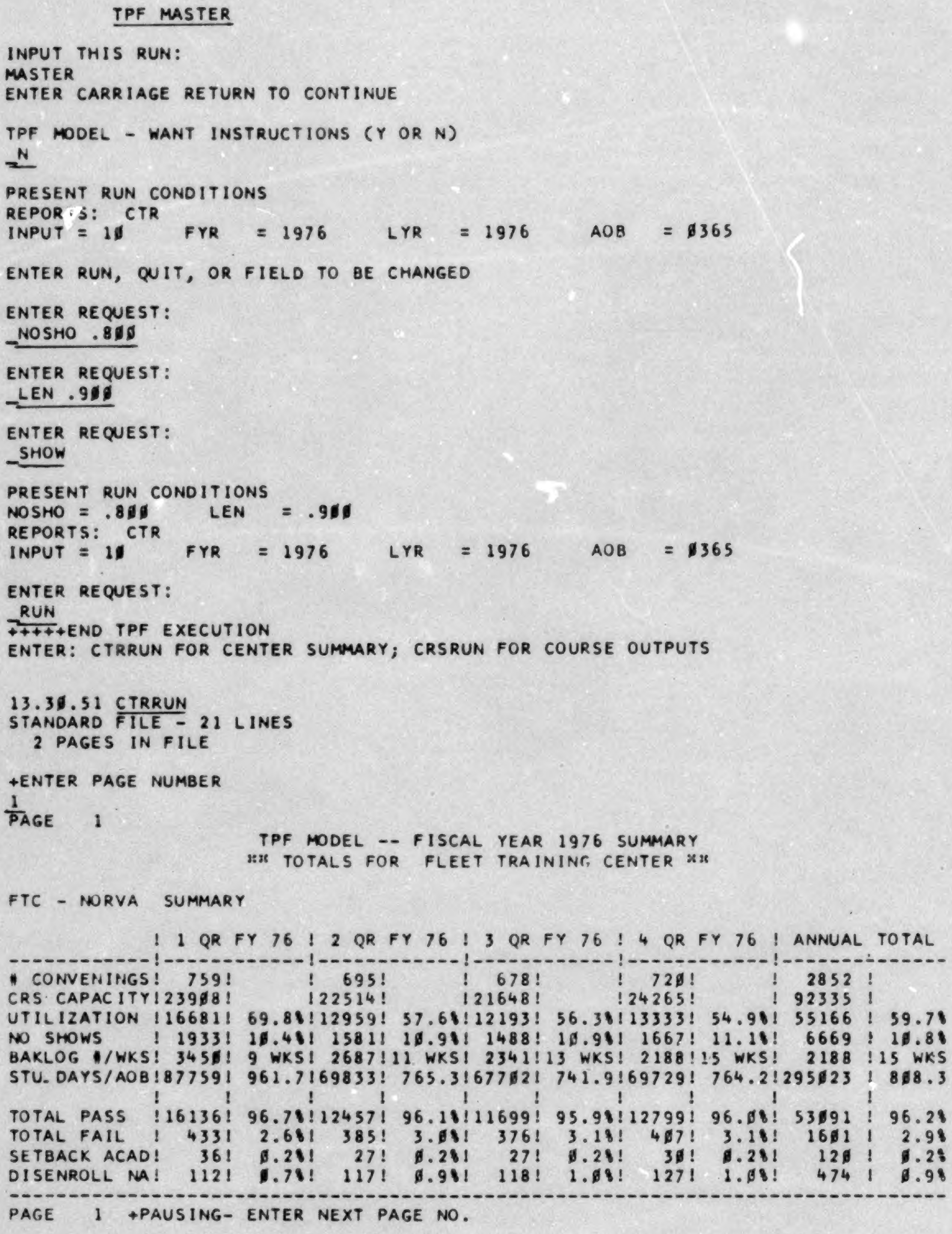
RUN TPF MODEL

```
         TPF MASTER SAVE

INPUT THIS RUN:
MASTER
SAVE OPTION IN EFFECT THIS RUN
ENTER CARRIAGE RETURN TO CONTINUE

TPF MODEL - WANT INSTRUCTIONS (Y OR N)
_Y

ENTER: FNAME XXXX  (SET FNAME TO VALUE)
     . FNAME DEACT (DEACT FNAME)
       SHOW        (SHOW RUN COND)
       RUN         (RUN MODEL)

FIELDS:  FYR   (NNNN)  LYR   (NNNN)  AOB   (NNNN)  CDP   (AAAA)  SCH   (AAAA)
         FAIL  (NNNN)  NOSHO (NNNN)  DMD   (NNNN)  TREND (NNNN)  CONV  (NNNN)
         LEN   (NNNN)  CAP   (NNNN)  SETB  (NNNN)

REPORTS: CRS   (N)     SCHL  (N)     CTR (N)       PRINT (N)

PRESENT RUN CONDITIONS
REPORTS:  CRS   CTR
INPUT = 10     FYR   = 1976     LYR   = 1976     AOB   = 0365

ENTER RUN, QUIT, OR FIELD TO BE CHANGED

ENTER REQUEST:
_CRS DEACT

ENTER REQUEST:
_SHOW

PRESENT RUN CONDITIONS
REPORTS:  CTR
INPUT = 10     FYR   = 1976     LYR   = 1976     AOB   = 0365

ENTER REQUEST:
_RUN
++++END TPF EXECUTION
ENTER: CENTER FOR CENTER SUMMARY; COURSE FOR COURSE OUTPUTS
12.23.55
```

DISPLAY RESULTS

```
         CENTER
STANDARD FILE - 21 LINES
  4 PAGES IN FILE

+ENTER PAGE NUMBER
1
PAGE   1
                     TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                   ** TOTALS FOR  FLEET TRAINING CENTER **

FTC - NORVA  SUMMARY

            | 1 QR FY 76 | 2 QR FY 76 | 3 QR FY 76 | 4 QR FY 76 | ANNUAL TOTAL
------------|------------|------------|------------|------------|--------------
# CONVENINGS|  759|      |  695|      |  678|      |  720|      |  2852 |
CRS CAPACITY|23980|      |22514|      |21648|      |24265|      | 92335 |
UTILIZATION |16209| 67.8%|12559| 55.8%|11825| 54.6%|12918| 53.2%| 53511 | 58.0%
NO SHOWS    | 2423| 13.0%| 1974| 13.6%| 1861| 13.6%| 2082| 13.9%|  8340 | 13.5%
BAKLOG #/WKS| 3432| 9 WKS| 2676|11 WKS| 2325|13 WKS| 2172|15 WKS|  2172 |15 WKS
STU DAYS/AOB|92519|1013.9|74192| 813.1|71850| 787.4|74288| 814.1|312849 | 857.1
            |     |      |     |      |     |      |     |      |       |
TOTAL PASS  |15686| 96.8%|12069| 96.1%|11348| 96.0%|12393| 95.9%| 51496 | 96.2%
TOTAL FAIL  |  417|  2.6%|  375|  3.0%|  355|  3.1%|  400|  3.1%|  1557 |  2.9%
SETBACK ACAD|   36|  0.2%|   27|  0.2%|   27|  0.2%|   30|  0.2%|   120 |  0.2%
DISENROLL NA|  106|  0.7%|  115|  0.9%|  112|  0.9%|  125|  1.0%|   450 |  0.9%
-----------------------------------------------------------------------------------
PAGE   1  +PAUSING- ENTER NEXT PAGE NO.
DONE
+DISPLAY TPF ENDED

12.30.48
```

FIGURE V-4   TPF MODEL BASELINE RUN



```
        TPF MASTER

INPUT THIS RUN:
MASTER
ENTER CARRIAGE RETURN TO CONTINUE

TPF MODEL - WANT INSTRUCTIONS (Y OR N)
 N

PRESENT RUN CONDITIONS
REPORTS:  CTR
INPUT = 10      FYR    = 1976     LYR    = 1976     AOB    = 0365

ENTER RUN, QUIT, OR FIELD TO BE CHANGED

ENTER REQUEST:
 NOSHO .800

ENTER REQUEST:
 LEN .900

ENTER REQUEST:
 SHOW

PRESENT RUN CONDITIONS
NOSHO = .800      LEN    = .900
REPORTS:  CTR
INPUT = 10      FYR    = 1976     LYR    = 1976     AOB    = 0365

ENTER REQUEST:
 RUN
+++++END TPF EXECUTION
ENTER: CTRRUN FOR CENTER SUMMARY; CRSRUN FOR COURSE OUTPUTS


13.30.51 CTRRUN
STANDARD FILE - 21 LINES
  2 PAGES IN FILE

+ENTER PAGE NUMBER
1
PAGE    1
                         TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                        ** TOTALS FOR  FLEET TRAINING CENTER **

FTC - NORVA  SUMMARY

               ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
---------------!------------!------------!------------!------------!-------------
# CONVENINGS!  759!        !  695!        !  678!        !  720!        !  2852 !
CRS CAPACITY!23908!        !22514!        !21648!        !24265!        ! 92335 !
UTILIZATION !16681! 69.8%!12959! 57.6%!12193! 56.3%!13333! 54.9%! 55166 ! 59.7%
NO SHOWS    ! 1933! 10.4%! 1581! 10.9%! 1488! 10.9%! 1667! 11.1%!  6669 ! 10.8%
BAKLOG #/WKS! 3450! 9 WKS! 2687!11 WKS! 2341!13 WKS! 2188!15 WKS!  2188 !15 WKS
STU.DAYS/AOB!87759! 961.7!69833! 765.3!67702! 741.9!69729! 764.2!295023 ! 808.3
            !     !      !     !      !     !      !     !      !        !
TOTAL PASS  !16136! 96.7%!12457! 96.1%!11699! 95.9%!12799! 96.0%! 53091 ! 96.2%
TOTAL FAIL  !  433!  2.6%!  385!  3.0%!  376!  3.1%!  407!  3.1%!  1601 !  2.9%
SETBACK ACAD!   36!  0.2%!   27!  0.2%!   27!  0.2%!   30!  0.2%!   120 !  0.2%
DISENROLL NA!  112!  0.7%!  117!  0.9%!  118!  1.0%!  127!  1.0%!   474 !  0.9%
---------------------------------------------------------------------------------
PAGE    1  +PAUSING- ENTER NEXT PAGE NO.
```

FIGURE V-5 SAMPLE PROBLEM: REDUCE NO SHOWS AND COURSE LENGTHS

```
        TPF MASTER

INPUT THIS RUN:
MASTER
ENTER CARRIAGE RETURN TO CONTINUE

TPF MODEL - WANT INSTRUCTIONS (Y OR N)
_N

PRESENT RUN CONDITIONS
NOSHO = .800      LEN   = .900
REPORTS:  CTR
INPUT = 10      FYR   = 1976      LYR   = 1976      AOB   = 0365

ENTER RUN, QUIT, OR FIELD TO BE CHANGED

ENTER REQUEST:
_LEN DEACT

ENTER REQUEST:
_CONV .900

ENTER REQUEST:
_SHOW

PRESENT RUN CONDITIONS
NOSHO = .800      CONV  = .900
REPORTS:  CTR
INPUT = 10      FYR   = 1976      LYR   = 1976      AOB   = 0365

ENTER REQUEST:
_RUN
++++END TPF EXECUTION
ENTER: CTRRUN FOR CENTER SUMMARY; CRSRUN FOR COURSE OUTPUTS

13.35.16 CTRRUN
STANDARD FILE - 21 LINES
  2 PAGES IN FILE

+ENTER PAGE NUMBER
1
PAGE    1
                    TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                   ** TOTALS FOR  FLEET TRAINING CENTER **

FTC - NORVA  SUMMARY

            ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 OR FY 76 ! ANNUAL TOTAL
------------!------------!------------!------------!------------!-------------
# CONVENINGS!  694!      !  622!      !  606!      !  650!      !  2572 !
CRS CAPACITY!21806!      !20049!      !19794!      !21608!      ! 83257 !
UTILIZATION !15955! 73.2%!12455! 62.1%!12192! 61.6%!12934! 59.9%! 53536 ! 64.3%
NO SHOWS    ! 1838! 10.3%! 1491! 10.7%! 1487! 10.9%! 1565! 10.8%!  6381 ! 10.6%
BAKLOG #/WKS! 4431!11 WKS! 4044!13 WKS! 3945!14 WKS! 4074!16 WKS!  4074 !16 WKS
STU DAYS/AOB!90425! 991.0!74052! 811.5!73445! 804.9!73350! 803.8!311272 ! 852.8
            !     !      !     !      !     !      !     !      !       !
TOTAL PASS  !15443! 96.8%!11959! 96.0%!11701! 96.0%!12413! 96.0%! 51516 ! 96.2%
TOTAL FAIL  !  402!  2.5%!  382!  3.1%!  374!  3.1%!  398!  3.1%!  1556 !  2.9%
SETBACK ACAD!   32!  0.2%!   27!  0.2%!   23!  0.2%!   27!  0.2%!   109 !  0.2%
DISENROLL NA!  110!  0.7%!  114!  0.9%!  117!  1.0%!  123!  1.0%!   464 !  0.9%
------------------------------------------------------------------------------
PAGE    1  +PAUSING- ENTER NEXT PAGE NO.
```

FIGURE V-6 SAMPLE PROBLEM: REDUCE NO SHOWS AND COURSE CONVENINGS

of different strategies, and would most likely further test alternative strategies. By use of the TPF 'across-the-board' capability, the user did not need to consider the possibility of fractional convenings or adjusted course lengths; the model performed these rationalizations automatically. The model likewise does not optimize a solution for the user, but simulates the effects of the user modification or strategy.

TPF OPERATIONAL TEST PROCEDURES

The operation of the TPF model system can be verified by running an individual course stored in a permanent data set, and comparing the results against previously obtained results. For purposes of this test, data for course CDP 0129 are stored in a permanent data set called VFY DATA. To use these data for the test run and invoke the TPF model, enter:

```
TPF VERIFY
```

This will start the procedure, using VFY DATA as the Master data base. The first message asks the user if he wants instructions. The response should be 'Y', and the display should be as in Figure V-7. Following the display of the TPF instructions and the fields, the present run conditions are displayed. If the run conditions are not exactly as they appear in Figure V-7, they should be modified using the procedure outlined in the TPF Operational Procedures. Basically, this involves deactivating fields that are set, but not desired, by entering:

```
FIELDNAME DEACT
```

and by setting fields to the desired value by entering:

```
FIELDNAME VALUE
```

Enter SHOW prior to running the model to verify run conditions. Once the run conditions are the same as those shown in Figure V-7, the command RUN should be entered. This entry will be followed shortly by the system display:

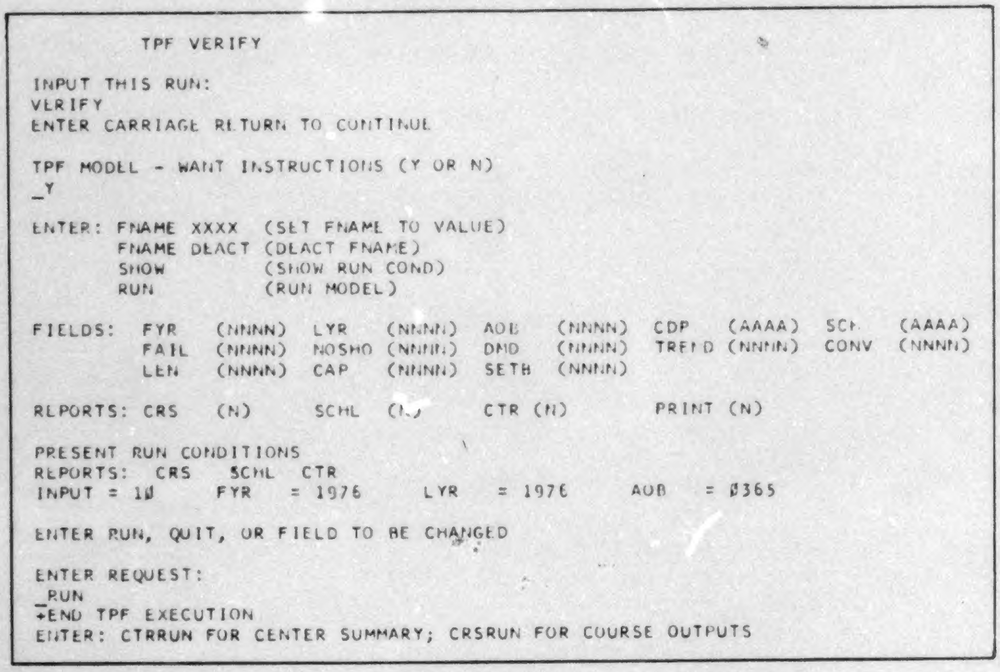
```
                    END TPF EXECUTION
ENTER:  CTRRUN FOR CENTER FORMAT: CRSRUN FOR COURSE FORMAT
```

At this time, the user should enter the command CRSRUN, and will receive a response:

```
STANDARD FILE - 25 LINES
    1 PAGES IN FILE

  + ENTER PAGE NUMBER
```

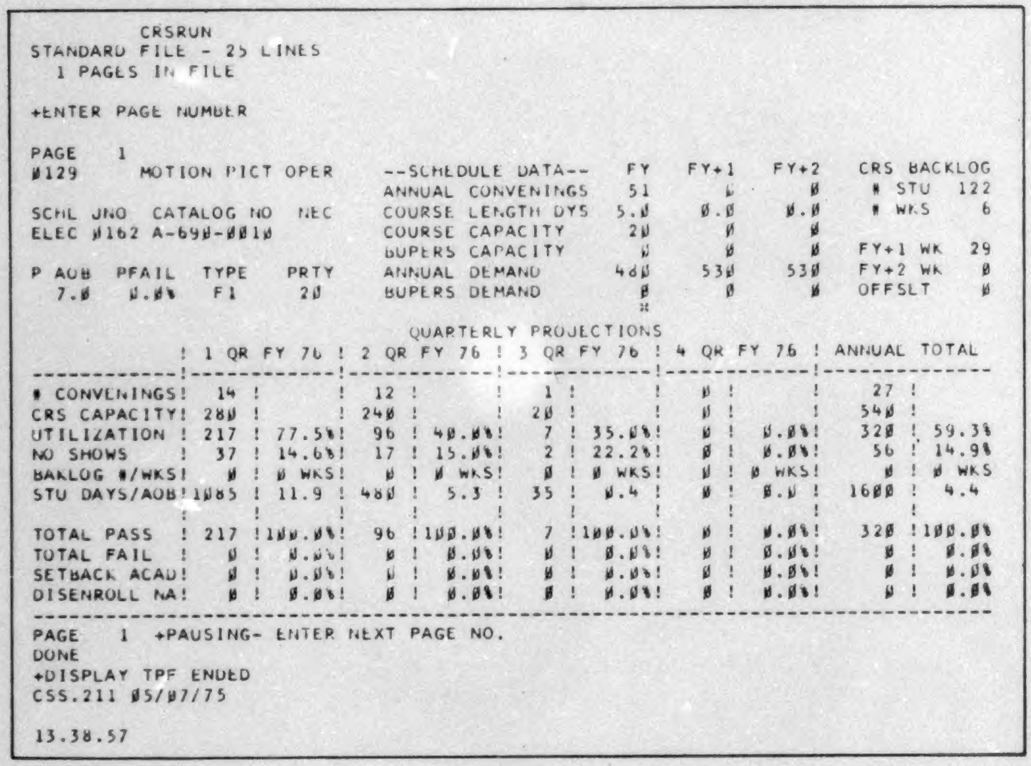
Following this display, enter a carriage return, which should produce the output as shown in Figure V-8. The message:

```
PAGE 1 +PAUSING - ENTER NEXT PAGE NO.
```



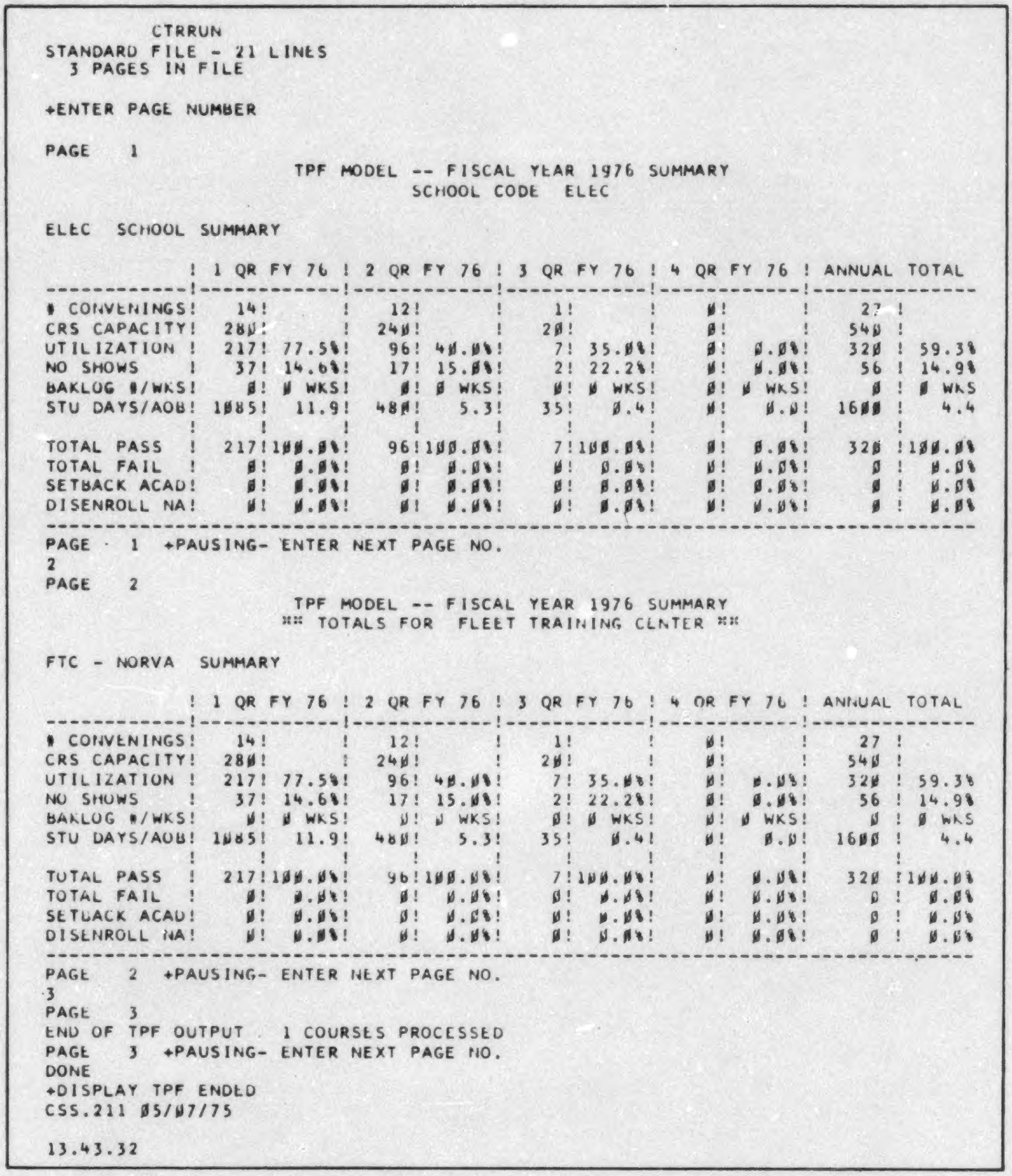
```
         TPF VERIFY

INPUT THIS RUN:
VERIFY
ENTER CARRIAGE RETURN TO CONTINUE

TPF MODEL - WANT INSTRUCTIONS (Y OR N)
_Y

ENTER: FNAME XXXX  (SET FNAME TO VALUE)
       FNAME DEACT (DEACT FNAME)
       SHOW        (SHOW RUN COND)
       RUN         (RUN MODEL)

FIELDS:  FYR   (NNNN)  LYR   (NNNN)  AOB   (NNNN)  CDP   (AAAA)  SCH   (AAAA)
         FAIL  (NNNN)  NOSHO (NNNN)  DMD   (NNNN)  TREND (NNNN)  CONV  (NNNN)
         LEN   (NNNN)  CAP   (NNNN)  SETB  (NNNN)

REPORTS: CRS   (N)      SCHL  (N)      CTR (N)        PRINT (N)

PRESENT RUN CONDITIONS
REPORTS:  CRS   SCHL  CTR
INPUT = 10     FYR   = 1976     LYR   = 1976     AOB   = 0365

ENTER RUN, QUIT, OR FIELD TO BE CHANGED

ENTER REQUEST:
_RUN
+END TPF EXECUTION
ENTER: CTRRUN FOR CENTER SUMMARY; CRSRUN FOR COURSE OUTPUTS
```

FIGURE V-7 TPF TEST RUN PROCEDURE



```
        CRSRUN
STANDARD FILE - 25 LINES
  1 PAGES IN FILE

+ENTER PAGE NUMBER

PAGE    1
0129     MOTION PICT OPER     --SCHEDULE DATA--    FY    FY+1    FY+2    CRS BACKLOG
                              ANNUAL CONVENINGS    51       0       0      # STU  122
SCHL JNO  CATALOG NO  NEC     COURSE LENGTH DYS   5.0     0.0     0.0      # WKS    6
ELEC 0162 A-690-0010          COURSE CAPACITY      20       0       0
                              BUPERS CAPACITY       0       0       0    FY+1 WK  29
P AOB  PFAIL   TYPE   PRTY    ANNUAL DEMAND       480     530     530    FY+2 WK   0
  7.0   0.0%    F1     20     BUPERS DEMAND         0       0       0    OFFSET    0

                                   QUARTERLY PROJECTIONS
            ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
------------!------------!------------!------------!------------!-------------
# CONVENINGS!  14 !      !  12 !      !   1 !      !   0 !      !   27 !
CRS CAPACITY! 280 !      ! 240 !      !  20 !      !   0 !      !  540 !
UTILIZATION ! 217 ! 77.5%!  96 ! 40.0%!   7 ! 35.0%!   0 !  0.0%!  320 ! 59.3%
NO SHOWS    !  37 ! 14.6%!  17 ! 15.0%!   2 ! 22.2%!   0 !  0.0%!   56 ! 14.9%
BAKLOG #/WKS!   0 ! 0 WKS!   0 ! 0 WKS!   0 ! 0 WKS!   0 ! 0 WKS!    0 ! 0 WKS
STU DAYS/AOB!1085 ! 11.9 ! 480 !  5.3 !  35 !  0.4 !   0 !  0.0 ! 1600 !  4.4
            !     !      !     !      !     !      !     !      !      !
TOTAL PASS  ! 217 !100.0%!  96 !100.0%!   7 !100.0%!   0 !  0.0%!  320 !100.0%
TOTAL FAIL  !   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!    0 !  0.0%
SETBACK ACAD!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!    0 !  0.0%
DISENROLL NA!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!   0 !  0.0%!    0 !  0.0%
------------------------------------------------------------------------------
PAGE    1  +PAUSING- ENTER NEXT PAGE NO.
DONE
+DISPLAY TPF ENDED
CSS.211 05/07/75

13.38.57
```

FIGURE V-8 TPF TEST RUN - COURSE OUTPUT



```
          CTRRUN
STANDARD FILE - 21 LINES
  3 PAGES IN FILE

+ENTER PAGE NUMBER

PAGE    1
                        TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                                   SCHOOL CODE  ELEC

ELEC  SCHOOL SUMMARY

            ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
------------!------------!------------!------------!------------!-------------
# CONVENINGS!   14!      !   12!      !    1!      !    0!      !    27 !
CRS CAPACITY!  280!      !  240!      !   20!      !    0!      !   540 !
UTILIZATION !  217! 77.5%!   96! 40.0%!    7! 35.0%!    0!  0.0%!   320 ! 59.3%
NO SHOWS    !   37! 14.6%!   17! 15.0%!    2! 22.2%!    0!  0.0%!    56 ! 14.9%
BAKLOG #/WKS!    0! 0 WKS!    0! 0 WKS!    0! 0 WKS!    0! 0 WKS!     0 ! 0 WKS
STU DAYS/AOB! 1085!  11.9!  480!   5.3!   35!   0.4!    0!   0.0!  1600 !   4.4
            !     !      !     !      !     !      !     !      !       !
TOTAL PASS  !  217!100.0%!   96!100.0%!    7!100.0%!    0!  0.0%!   320 !100.0%
TOTAL FAIL  !    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
SETBACK ACAD!    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
DISENROLL NA!    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
------------------------------------------------------------------------------
PAGE    1  +PAUSING- ENTER NEXT PAGE NO.
2
PAGE    2
                        TPF MODEL -- FISCAL YEAR 1976 SUMMARY
                      ** TOTALS FOR  FLEET TRAINING CENTER **

FTC - NORVA  SUMMARY

            ! 1 QR FY 76 ! 2 QR FY 76 ! 3 QR FY 76 ! 4 QR FY 76 ! ANNUAL TOTAL
------------!------------!------------!------------!------------!-------------
# CONVENINGS!   14!      !   12!      !    1!      !    0!      !    27 !
CRS CAPACITY!  280!      !  240!      !   20!      !    0!      !   540 !
UTILIZATION !  217! 77.5%!   96! 40.0%!    7! 35.0%!    0!  0.0%!   320 ! 59.3%
NO SHOWS    !   37! 14.6%!   17! 15.0%!    2! 22.2%!    0!  0.0%!    56 ! 14.9%
BAKLOG #/WKS!    0! 0 WKS!    0! 0 WKS!    0! 0 WKS!    0! 0 WKS!     0 ! 0 WKS
STU DAYS/AOB! 1085!  11.9!  480!   5.3!   35!   0.4!    0!   0.0!  1600 !   4.4
            !     !      !     !      !     !      !     !      !       !
TOTAL PASS  !  217!100.0%!   96!100.0%!    7!100.0%!    0!  0.0%!   320 !100.0%
TOTAL FAIL  !    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
SETBACK ACAD!    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
DISENROLL NA!    0!  0.0%!    0!  0.0%!    0!  0.0%!    0!  0.0%!     0 !  0.0%
------------------------------------------------------------------------------
PAGE    2  +PAUSING- ENTER NEXT PAGE NO.
3
PAGE    3
END OF TPF OUTPUT   1 COURSES PROCESSED
PAGE    3  +PAUSING- ENTER NEXT PAGE NO.
DONE
+DISPLAY TPF ENDED
CSS.211 05/07/75

13.43.32
```

FIGURE V-9 TPF TEST RUN - SCHOOL AND CENTER OUTPUT

should be the last line on the display. After comparing the data for accuracy, enter DONE to terminate the display.

The school and center outputs should be verified next. Enter CTRRUN to call the school and center reports. The message:

```
STANDARD FILE - 21 LINES
   3 PAGES IN FILE
```

should be displayed. Enter a carriage return to display the school format which should be the same as in Figure V-9. Following verification of the school data, enter another carriage return to display the center summary. Again, following verification of this display with Figure V-9, enter another carriage return and verify that the message:

```
END OF TPF OUTPUT  1 COURSES PROCESSED
```

is displayed. Enter DONE to terminate this system test.

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13. ABSTRACT

This report provides information necessary to familiarize the non-ADP user with the Design of Training Systems (DOTS) programs and to permit their initial application. It consists of a single volume containing a system overview and detailed information on the major subsystems: the DOTS data base, the Educational Technology Evaluation (ETE) model, the System Capabilities Resources and Requirements (SCRR) model and the Training Process Flow (TPF) model.

Each subsystem section contains a discussion of subsystem architecture, design assumptions, input requirements and output parameters. Procedures are provided for pre-application system test and for operational use. The DOTS data base section also includes a discussion of administrative procedures.

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Training Resource Evaluation Modeling						
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Educational Technology Evaluation Model						
Linear Programming						
Simulation						

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